**1.** In hypogonadal men, the agent that improves nocturnal but not visually evoked erections is:

A) testosterone.
B) apomorphine.
C) paroxetine.
D) yohimbine.
E) bromocriptine.

**Correct Answer** **A**

**Explanation** Androgen replacement in hypogonadal men increases sexual activity and interest. Regarding the relationship between androgen replacement and penile tumescence (NPT) testing, hypogonadal men demonstrate decreased erectile activity and this abnormality is corrected with testosterone replacement. Laboratory tested erectile responses to erotic films, however, are usually normal in hypogonadal men. These observations are consistent with the conclusion that the major effect of testosterone therapy on sexual function is to enhance libido and not to directly improve penile erection in a sexual setting. The answer to the question is, therefore, testosterone. None of the other drugs are known to exert these effects.

**2.** A 45- year- old man has left flank pain four hours after blunt flank trauma. Physical examination is normal. His blood pressure is 110/60 mm/Hg, pulse is 80, and urinalysis demonstrates 5 RBC/hpf. The best next step is:

A) IVP.
B) CT scan.
C) renal ultrasound.
D) isotope renography.
E) observation.

**Correct Answer** **E**

**Explanation** A review of 2,254 patients with suspected renal trauma seen from 1977 to 1992 was performed by McAninch and colleagues. Of the 1,588 blunt trauma patients with microscopic hematuria and no shock, three had significant injury but these cases were discovered during imaging or exploratory laparotomy for associated injury. Follow-up of 515 of 1,004 patients (51%) who did not undergo initial imaging revealed no significant complications. Adults with blunt renal trauma, microscopic hematuria and no shock (systolic pressure <90) or major associated intra-abdominal injuries can safely be spared radiographic imaging.

**3.** The termination of the spina cord (conus medullaris) is at which level:

A) Newborn: L3 Adult: L1.
B) Newborn: S3 Adult: L4.
C) Newborn: S4 Adult: L2.
D) Newborn: L5 Adult: L4.
E) Newborn: S5 Adult: L5.

**Correct Answer** **A**

**Explanation** The vertebral column and neural tube grow in the fetus asynchronously such that the cord ends successively in sacral and then lumbar levels. At birth the cord ends (conus medullaris) at the third lumbar vertebra. By two months of age, the cord is at the first or second lumbar vertebra where it stays throughout life.

**4.** A 24-year-old man with sickle cell disease develops priapism of 15 hours duration. The serum hemoglobin is 9.0 gm%, arterial blood gases on room air reveal a pO<sub>2</sub> of 85 and pH of 7.38. During the next 12 hours, the patient fails to improve despite receiving 2 liters of 0.9% saline with 88 mEq NaHCO<sub>3</sub> per liter, and continuous 35% oxygen by face mask. The next step is:

A) increase FiO<sub>2</sub> to 50%.
B) transfuse whole blood.
C) induce hypotensive general anesthesia.
D) irrigate corpora and perform sapheno-cavernosal shunt.
E) irrigate corpora and perform glans-cavernosal shunt.

**Correct Answer** **B**

**Explanation** When priapism occurs in a patient with sickle cell disease, initial therapy should attempt to correct contributing factors related to sickle cell disease such as dehydration, acidosis and anemia. He does not respond to rehydration, oxygenation, and alkalinization. Shunt procedures are usually unnecessary in patients with priapism and sickle cell disease. Blood transfusion will correct the anemia and enhance detumescence.

**5.** Erectile dysfunction related to which etiology responds best to the intracorporeal injection of vasoactive agents:

A) neurogenic.
B) mild vasculogenic.
C) severe vasculogenic.
D) post-priapism.
E) post-radiation.

**Correct Answer** **A**

**Explanation** Patients with neurogenic impotence exhibit a denervation supersensitivity and develop full erections after intracorporeal vasoactive injections. Patients with mild vasculogenic erectile dysfunction respond best to the combination of papaverine and phentolamine. Patients with impotence secondary to severe vasculogenic or post-priapismal or post-irradiation tissue changes respond least well, if at all, to intracorporeal injection of vasoactive drugs.

**6.** A three-year-old girl has gross hematuria. An IVP is obtained and shown in the figure below. The most appropriate initial therapeutic approach is:

A) antibiotics.
B) cystectomy.
C) biopsy, chemotherapy, and cystectomy.
D) biopsy and chemotherapy.
E) follow- up ultrasound in two weeks.

**Correct Answer** **D**

**Explanation** The IVP demonstrates bladder defects suggestive of sarcoma botryoides (embryonal rhabdomyosarcoma). The diagnosis should be confirmed by cystoscopic biopsy. Recent studies show that chemotherapy has been the most significant contribution to survival and, in some cases, has been demonstrated to be effective alone without the necessity for subsequent exenterative therapy. Some still recommend immediate cystectomy although surgery should probably be postponed until the degree of response to chemotherapy is assessed; more limited surgery may be possible with this approach.

**7.** The initial treatment for a patient with jejunal conduit syndrome is:

A) shorten the conduit.
B) correct stomal obstruction.
C) supplementary potassium.
D) supplementary sodium chloride.
E) supplementary bicarbonate.

**Correct Answer** **D**

**Explanation** Jejunal conduits are not generally recommended due to the high incidence of metabolic abnormalities directly due to the excellent permeability of this bowel segment. Jejunal conduit syndrome is characterized by hyponatremia, hypokalemia, hypochloremia, and volume depletion. Acidosis or alkalosis may be present. The cornerstone of treatment is sodium chloride supplementation.

**8.** A four-year-old boy undergoes left radical nephrectomy for Wilms' tumor. The pathologist reports that there are intralobar nephrogenic rests in the adjacent normal renal parenchyma. This finding indicates an increased risk for:

A) second malignancy in other organs.
B) distant metastases.
C) development of a contralateral Wilms' tumor.
D) tumor bed recurrence.
E) Wilms' tumor in other family members.

**Correct Answer** **C**

**Explanation** Nephrogenic rest is the currently favored term for Wilms' tumor precursor lesions. These were previously termed persistent nodular blastema, Wilms tumorlets, or nephroblastomatosis if there were diffuse lesions. Nephrogenic rests are found in 1% of infant autopsies. These lesions are frequently found in bilateral Wilms' tumor and the Denys-Drash syndrome. Most nephrogenic rests are identified on pathologic examination. Although diffuse lesions can be large enough to be seen on imaging studies, this is uncommon. The majority of nephrogenic rests will involute and only approximately 1 in 80 rests will develop into nephroblastoma. However, patients found to have nephrogenic rests in the adjacent normal renal parenchyma are likely to have nephrogenic rests in the contralateral kidney. They are at increased risk for contralateral relapse. It is recommended that increased surveillance of the contralateral kidney be performed post-op.

**9.** A 45-year-old man with squamous cell carcinoma of the penis undergoes bilateral ilioinguinal lymphadenectomy for persistent enlarged inguinal lymph nodes after six weeks of antibiotic therapy. After completing the inguinal dissection, the muscle that should be used to protect the exposed femoral vessels is:

A) gracilis.
B) sartorius.
C) rectus femoris.
D) vastus lateralis.
E) pectineus.

**Correct Answer** **B**

**Explanation** The only muscle that can be anatomically positioned over the femoral vessels is the sartorius muscle. Its anatomic location is from the anterior superior iliac spine to the medial aspect of the knee. For purposes of covering the femoral artery and vein, it can be detached from the anterior superior iliac spine and sutured more medially to the inguinal ligament.

**10.** A continent 61- year- old woman becomes incontinent immediately after transvaginal repair of a Grade III cystocele. This is most likely due to:

A) detrusor instability.
B) partial bladder denervation.
C) underlying urethral deficiency.
D) surgical damage to the urethral sphincter.
E) bladder neck and proximal urethral obstruction.

**Correct Answer** **C**

**Explanation** The most common cause of the onset of urinary incontinence after repair of a large cystocele is underlying urethral dysfunction which is unmasked by reduction of the cystocele. Cystocele repair should not cause incontinence due to urethral and bladder denervation or obstruction of the proximal urethra. Cystocele repair is typically associated with improvement in both bladder emptying and urge incontinence. Thus a weak urethra with either urethral hypermobility or intrinsic sphincter deficiency is likely to be the cause of incontinence in this setting.

**11.** Cyclosporine A and tacrolimus (FK506) exert their immunosuppressive effect by:

A) altering the T- cell receptor/CD3 complex.
B) blocking the CD28/B7 co- stimulatory pathway.
C) inhibiting inosine monophosphate dehydrogenase.
D) inhibiting phosphatase activity of calcineurin.
E) inhibiting purine synthesis.

**Correct Answer** **D**

**Explanation** Cyclosporine A and tacrolimus (FK506) block T-cell activation by a similar mechanism. These drugs complex with a cytoplasmic receptor protein (cyclophillin for cyclosporine and FK-binding protein for tacrolimus) which then binds calcineurin and inhibits its phosphatase activity. This prevents expression of T-cell activation genes such as IL-2 and the IL-2 receptor.

**12.** A 22-year-old primigravida woman in her 28th week of pregnancy develops hematuria and intermittent right flank pain. Ultrasound reveals a 12 mm calculus at the level of the right UPJ. The patient is afebrile, and a urine culture is sterile. The next step is:

A) hydration and observation.
B) percutaneous nephrostolithotomy.
C) percutaneous nephrostomy.
D) ureteroscopic fragmentation.
E) indwelling ureteral stent.

**Correct Answer** **E**

**Explanation** The average size of a passed calculus in these patients is 6 mm (2-11 mm). Among the remaining patients, over 80% will likely be in their third trimester; in this group, placement of an indwelling stent is the most generally accepted next step. The stent can be placed under ultrasonic or fluoroscopic control. If fluoroscopy is used, the fetus should be shielded; however at this time, chances of any adverse developmental effect of radiation to the fetus are nil. It is recommended that the stent be changed every 4-8 weeks, although some urologists have reported stent indwell times for the duration of the last trimester with successful retrieval of the encrusted stent. The use of a percutaneous nephrostomy in the third trimester is less acceptable due to the discomfort to the patient, invariable bacterial infestation of the urine, and the frequent problems of encrustation and blockage of the nephrostomy tube necessitating emergency changing of the tube approximately once a month. In this patient, hydration and observation are not reasonable; given the 12 mm size of the stone, spontaneous passage is unlikely. A surgical procedure

**13.** A three-year-old girl with a large abdominal mass has an IVP which demonstrates bilateral distortion of the renal collecting systems. Chest and abdominal CT scans show clear lung fields but a large tumor of the right kidney and smaller tumors of the left. The next step is:

A) chemotherapy.
B) bilateral nephrectomy.
C) needle biopsy bilaterally.
D) exploration and bilateral biopsy.
E) right nephrectomy and partial left nephrectomy.

**Correct Answer** **D**

**Explanation** There is high likelihood that this child has bilateral Wilms' tumor but treatment is dependent on biopsy. Chemotherapy is the predominant therapy for this disease but histology will ultimately dictate the aggressiveness of the chemotherapy and surgical therapy. For favorable histology, renal preservation is a primary goal. In this case, open biopsy with node sampling would be the most logical initial step.

**14.** An eight-year-old boy with fecal incontinence secondary to sacral abnormalities and normal renal function undergoes augmentation cystoplasty for decreased bladder capacity. The use of which bowel segment would most likely exacerbate his fecal incontinence:

A) sigmoid colon.
B) ileocecal segment.
C) ileum.
D) jejunum.
E) transverse colon.

**Correct Answer** **B**

**Explanation** Children with neurogenic bowel depend partly on chronic constipation for the achievement of fecal continence. When the ileocecal valve is lost, colonic bacteria can invade the small bowel and this changed flora may contribute to diarrhea. In addition, the terminal ileum has a major role in the enterohepatic circulation of bile salts and, if too much ileum is removed, it is possible to create a bile salt diarrhea (due to irritation of the epithelium by the bile salts).

**15.** During metabolic stone evaluation, a 35-year-old man has a urine pH of 5.45 and total urinary uric acid of 368 mg/day (normal < 650 mg/day). His urinary uric acid level rises to 1079 mg/day after one month of potassium citrate therapy. The rise in his urinary uric acid level is due to:

A) increased dietary purine intake.
B) increased purine turnover.
C) increased production of endogenous uric acid.
D) re-suspension of urinary uric acid.
E) inhibition of xanthine oxidase.

**Correct Answer** **D**

**Explanation** If one were to look closely at the initial 24-hour urine collection from this patient, they would note small white crystals at the bottom of the urine container which are uric acid crystals which have precipitated out of solution. Uric acid precipitation is due to the urine pH being below the PKA of uric acid (less than 5.5). Once the urine pH is raised above 5.5 with alkali therapy (in this case potassium citrate), the uric acid will go back into solution and the true solubilized uric acid level can be calculated by analysis of this 24-hour urine specimen.

**16.** Three weeks following primary repair of a urethral stricture utilizing a preputial graft, a 21-year-old man has a tender fluctuant perineum. The best next step is:

A) placement of urethral catheter.
B) incision and drainage of perineum.
C) antibiotics and sitz baths.
D) removal of graft.
E) exploration and repair of urethra.

**Correct Answer** **B**

**Explanation** Abscess formation occurs uncommonly after urethroplasty. However, when it does occur, it should be managed like all abscesses with careful incision and drainage initially. Antibiotics and sitz baths alone are inadequate forms of treatment. Catheterization is not necessary in most cases and it may disrupt the graft. Surgical revision is not necessary initially and would likely fail given the presence of infection.

**17.** The figure below is a KUB from a six-year-old girl who has passed two calcium phosphate calculi. The most likely cause of her urolithiasis is:

A) primary hyperoxaluria.
B) primary hyperparathyroidism.
C) idiopathic hypercalciuria.
D) cystinuria.
E) renal tubular acidosis.

**Correct Answer** **E**

**Explanation** Renal tubular acidosis produces calcium phosphate stones. Although primary hyperparathyroidism also produces calcium phosphate stones, it is quite rare before puberty. Primary hyperoxaluria and idiopathic hypercalciuria produce calcium oxalate stones. Cystinuria results in cystine stones.

**18.** A 77-year-old woman has asymptomatic E. Coli bacteriuria. The best treatment is:

A) ciprofloxacin.
B) trimethoprim-sulfamethoxazole.
C) nitrofurantoin.
D) re- culture urine.
E) observation.

**Correct Answer** **E**

**Explanation** There is evidence in adults that while 80% of patients with asymptomatic bacteriuria can be cured with a seven day course of oral antimicrobial therapy, long term cure rates are no better than placebo therapy because of reinfections in treated patients and spontaneous cures in untreated subjects. Moreover, treatment of asymptomatic infections, which are often associated with self agglutinating E. coli that have lost their O polysaccharide surface antigens, is frequently followed by a new E. coli infection with intact O surface antigens that are apparently responsible for acute symptoms. For this reason a sound argument can be made against treating an asymptomatic infection just to achieve low growth in the urine for a short period of time.

**19.** A six-year-old girl has recurrent UTIs, Grade II/V bilateral vesicoureteral reflux, day and night wetting, and encopresis. Her neurological examination is normal. The urodynamic finding which would warrant further investigation is:

A) 350 cc capacity, highly compliant bladder.

B) 50 cc residual.

C) voluntary sphincter contraction during voiding.

D) involuntary bladder contractions.

E) involuntary sphincter contraction during voiding.

**Correct Answer** **E**

**Explanation** Involuntary contraction of the urinary sphincter during voiding, representing true detrusor-sphincter dyssynergia, should strongly suggest the presence of an underlying neurological disturbance, and requires further investigation. Involuntary bladder contraction, on the other hand, with or without sphincter contraction during filling, commonly occurs in children with this type of symptomatology and is typically seen with the pediatric uninhibited bladder, possibly exacerbated by constipation. With this patient's estimated bladder capacity at approximately 240 cc, an enlarged, flaccid bladder may be seen in association with reflux or infrequent voiding. Residual bladder volume in the range of 10% to 15% of bladder capacity is normal in children and may be increased artificially by refluxed urine.

**20.** Compared with radical perineal prostatectomy, radical retropubic prostatectomy provides a wider surgical margin:

A) laterally.

B) anteriorly.

C) apically.

D) at the bladder neck.

E) at the seminal vesicles.

**Correct Answer** **B**

**Explanation** Virtually identical margins can be achieved using the perineal approach as in retropubic prostatectomy except anteriorly. Traditionally, the dorsal vein complex and associated tissues are left on the anterior aspect of the retropubic prostatectomy specimen. Conversely, in the perineal approach, the dorsal vein complex is not ligated and the plane of dissection lies between the dorsal vein complex and the anterior aspect of the prostate, the impact of this difference upon surgical tumor control is unknown.

**21.** A 65- year- old man has an AUA Symptom Score of 22 and a post void residual of 50 cc. The prostate volume is 60 cc. CMG shows severe detrusor instability and a pressure flow urodynamic study shows high grade obstruction. The best next step to improve his symptoms is:

A) terazosin.
B) oxybutynin.
C) finasteride.
D) transurethral microwave therapy.
E) TURP.

**Correct Answer** **A**

**Explanation** There are no absolute indications for intervention, therefore surgical or any intervention is not mandatory. The primary indication is to improve symptoms. All of the options may improve symptoms. Oxybutynin is not advisable in the presence of high grade obstruction. Transurethral microwave thermotherapy (TUMT) achieves symptom improvement similar to an alpha-1 blocker. Its efficacy in large prostates and durability of response are controversial. Alpha-1 blockers, such as terazosin, are more effective than 5-alpha reductase inhibitors independent of prostate volume. The degree of obstruction does not influence symptom improvement in response to alpha-1 blockade. TURP will achieve the greatest symptom improvement, however the morbidity of the surgical procedure makes this a less desirable first line treatment.

**22.** The most important predisposing factor for candidemia in newborns is:

A) intravenous catheters.
B) steroid administration.
C) blood dyscrasia.
D) antibiotic therapy.
E) immunosuppressive therapy.

**Correct Answer** **D**

**Explanation** Antibiotic therapy, particularly for gram-negative bacteremia, is the most important factor in developing candidemia. Other factors such as steroids, catheters, and immunosuppression from drugs or disease do enhance the chances of fungal infection while on antibiotic therapy.

**23.** A 73-year-old woman has moderate bilateral hydroureteronephrosis on an IVP performed two weeks following radical cystectomy and ileal conduit diversion for bladder cancer. Preoperative IVP was normal. This finding is most likely due to:

A) hypoperistalsis of the distal ureter.
B) distal ureteral ischemia.
C) aperistaltic ileal conduit.
D) ureteroileal anastomotic edema.
E) obstruction of the abdominal stoma.

**Correct Answer** **D**

**Explanation** An IVP after anterior pelvic exenteration and creation of an ileal conduit just before discharge from the hospital is useful for assessing obstruction and identifying urinary extravasation. It is perfectly normal to have mild to moderate hydroureteronephrosis secondary to physiologic edema of the ureteroileal anastomosis. No intervention is necessary. This condition routinely resolves within two to three months following the operation.

**24.** Megalourethra is associated with:

A) epispadias.
B) prune belly syndrome.
C) imperforate anus.
D) urethral stricture.
E) posterior urethral valves.

**Correct Answer** **B**

**Explanation** Megalourethra is characterized by marked dilation of the penile urethra and results in a scaphoid, upwardly curved appearance to the penis. It is due to maldevelopment or absence of formation of the corpus spongiosum and is most frequently associated with the prune belly syndrome.

**25.** A 16- year- old boy with myelomeningocele has a small capacity bladder, poor compliance, poor outlet resistance and urinary incontinence. He is unable to self-catheterize per urethra. Bladder augmentation and a Mitrofanoff stoma should be performed with:

A) purse string ligation of bladder neck.
B) bladder neck reconstruction.
C) artificial sphincter.
D) intraoperative periurethral collagen.
E) division and closure of bladder neck.

**Correct Answer** **E**

**Explanation** This boy will need a low pressure reservoir, easy access to empty the reservoir and relief of incontinence. Bladder augmentation and appendicovesicostomy will solve the first two problems. The severe degree of incontinence and minimal outlet resistance necessitates that another procedure be performed. The artificial sphincter increases the expense and complication rate. Ligation alone of the bladder neck has a low rate of success. Reliable closure of the bladder neck requires division and two layer closure.

**26.** A 52-year-old man has lethargy and weakness. His serum laboratory values are: sodium 115 mEq/l, potassium 4.5 mEq/l, chloride 80 mEq/l, CO<sub>2</sub> 23 mEq/l, BUN 8 mg/dl, creatinine 0.8 mg/dl, uric acid 2.9 mg/dl. The most likely diagnosis is:

A) Addison's disease.

B) congestive heart failure.

C) cirrhosis with ascites.

D) inappropriate antidiuretic hormone secretion.

E) chronic diarrhea.

**Correct Answer** **D**

**Explanation** All of the above conditions can cause hyponatremia but the syndrome of inappropriate antidiuretic hormone secretion (SIADH) is the only one associated with hypouricemia and a normal serum BUN and creatinine. SIADH is due to sustained endogenous over-production of ADH. Patients with SIADH reach a steady state in which body water is expanded by water retention but in which natriuresis prevents edema. Relative volume expansion results in an increased glomerular filtration rate, tubular sodium wasting and reduced net tubular absorption of creatinine and uric acid. Volume contracted states such as Addison's disease and chronic diarrhea are associated with hyperuricemia and pre-renal azotemia. In congestive heart failure and cirrhosis, serum uric acid is in the high normal range and the BUN and creatinine are often elevated.

**27.** A 48-year-old woman with stress urinary incontinence underwent a Burch urethral suspension. Preoperatively, the physical examination was normal except for urethral hypermobility. Postoperatively, the patient is continent but complains of a vaginal mass and pressure. The most likely diagnosis is:

A) cystocele.
B) enterocele.
C) rectocele.
D) uterine prolapse.
E) urethral diverticulum.

**Correct Answer** **B**

**Explanation** A cystocele or rectocele would have been readily apparent on preoperative pelvic examination. Enterocele is harder to evaluate on examination and can develop de novo in up to 15% of cases of retropubic bladder neck suspension where the bladder neck is pulled anteriorly. Retropubic suspension procedures generally do not affect uterine position and function. The patient does not have symptoms of a urethral diverticulum, and the Burch suspension does not predispose to its development.

**28.** Six days after cystoprostatectomy and ileal conduit diversion, a patient has 70 cc/day of enteric material draining from a pelvic drain. The patient is afebrile and has no peritoneal signs. The best next step is:

A) bowel reanastomosis.
B) diverting colostomy.
C) total parenteral nutrition.
D) low residue enteral feedings.
E) rectal tube.

**Correct Answer** **C**

**Explanation** The patient presenting with a bowel fistula but without sepsis or an acute abdomen should be treated by nasogastric (or long tube) decompression and total parenteral nutrition for 4-6 weeks. Patients in whom this conservative treatment has failed require reoperation. Urgent surgery is rarely indicated in this setting. Low residue enteral feedings are not as satisfactory as total parenteral nutrition.

**29.** Fetal ureteropelvic junction obstruction is most difficult to distinguish from:

A) multicystic dysplastic kidney.
B) polycystic kidney.
C) ectopic ureterocele.
D) posterior urethral valves.
E) refluxing megaureter.

**Correct Answer** **A**

**Explanation** The most frequent error in the diagnosis of fetal uropathy is in distinguishing ureteropelvic junction obstruction from multicystic dysplastic kidney.

**30.** Percutaneous renal biopsy is contraindicated in a ten-year-old boy with:

A) severe hypertension.
B) nephrotic syndrome.
C) rapidly progressive glomerulonephritis.
D) a transplant kidney.
E) IgA nephropathy.

**Correct Answer** **A**

**Explanation** Nephrotic syndrome, rapidly progressive glomerulonephritis and renal transplant with diminished function are common indications for renal biopsy. In a boy this size, access to the kidney can be carried out with heavy sedation. With persistent hematuria, despite lack of symptoms, renal biopsy may be helpful in making a histologic diagnosis. The presence of severe hypertension is associated with a significant risk for hemorrhage post biopsy.

**31.** A 38-year-old paraplegic man has a sustained erection of ten hours duration following the intracorporeal injection of 10 ug of prostaglandin E1. The most appropriate management is intracorporeal injection of:

A) epinephrine.
B) phentolamine.
C) phenylephrine.
D) terbutaline.
E) phenoxybenzamine.

**Correct Answer** **C**

**Explanation** Blood flow to the penis is increased by drugs that elicit corporal smooth muscle relaxation. The treatment of priapism resulting from intracavernous drug therapy, if simple irrigation is unsuccessful, is with an alpha-agonist. While epinephrine would be effective, its beta-agonist activity may promote cardiovascular side effects. Therefore, phenylephrine is the correct answer.

**32.** A 45-year-old woman has gallstones and a right renal peripelvic cyst seen on abdominal ultrasound performed for right upper abdominal pain. IVP shows prompt visualization bilaterally but distortion of the right collecting system and mild dilation of the lower pole calyces. She should undergo laparoscopic cholecystectomy and:

A) percutaneous cyst drainage.
B) laparoscopic cyst unroofing.
C) ureteral stent placement.
D) percutaneous nephrostomy.
E) observation.

**Correct Answer** **E**

**Explanation** This patient has a peri-pelvic cyst which frequently causes distortion of the collecting system but rarely is associated with clinically significant obstruction. No treatment is indicated and observation alone is appropriate.

**33.** A 67-year-old man had a salvage radical prostatectomy two years after radiotherapy for localized prostate cancer. A urethrorectal fistula is diagnosed six weeks post-operatively. The best treatment is diverting colostomy and:

A) observation.
B) suprapubic tube drainage.
C) transrectal repair.
D) perineal repair with rectal pull through.
E) transabdominal repair with omental flap.

**Correct Answer** **E**

**Explanation** This fistula will not heal with observation or colostomy alone. Transrectal repair is only indicated in the early postoperative course. Perineal repair with rectal pull through is possible but it is technically difficult particularly following radiotherapy and fecal soiling has been a troublesome complication. A transabdominal repair with omental flap is the best treatment for this type of radiation induced fistula.

**34.** Primary hyperaldosteronism caused by bilateral adrenal hyperplasia is best managed by:

A) bilateral adrenalectomy.
B) spironolactone administration.
C) potassium supplementation.
D) salt restriction.
E) Captopril administration.

**Correct Answer** **B**

**Explanation** Patients with bilateral adrenal hyperplasia are best treated medically. Bilateral adrenalectomy will sacrifice glucocorticoid and mineral corticoid function. Moreover, either partial or unilateral adrenalectomy will not correct the hypertension accompanying this disorder.

**35.** The pharmacological agent which produces a diuresis by inhibiting the release of vasopressin (ADH) from the central nervous system is:

A) hydrochlorothiazide.
B) lithium.
C) methoxyflurane.
D) furosemide.
E) alcohol.

**Correct Answer** **E**

**Explanation** Lithium inhibits vasopressin action both proximal and distal to cAMP formation in the collecting duct. Complications of lithium carbonate treatment can include interstitial nephropathy. Amiloride can reduce lithium-induced polyuria. Diuretics often stimulate vasopressin release by their volume depletion. Alcohol is a potent inhibitor of ADH release with a consistent dose response relationship.

**36.** Mortality associated with Renacidin (hemiacidrin) irrigation of the kidney is most likely due to:

A) pulmonary emboli.
B) hypomagnesemia.
C) gram-negative sepsis.
D) anaphylactic reaction.
E) hyperkalemia.

**Correct Answer** **C**

**Explanation** Intrarenal irrigation of infected struvite stones with hemiacidrin (Renacidin) can cause pyelonephritis, intrarenal or perirenal abscess as well as profound sepsis. Most of these complications relate to excessive irrigation pressures with extravasation and absorption of infected solutions or to malposition position of the catheter. Magnesium toxicity from use of hemiacidrin occasionally may occur. Respiratory paralysis and death may result from severe hypermagnesemia. Generally,intrarenal chemolysis with hemiacidrin is a safe procedure provided that strict guidelines are observed during therapy. Chemolysis should always be performed at low pressures, in sterile urine and with periodic monitoring of appropriate blood and urine studies.

**37.** A 32-year-old man with glomerulonephritis needs a kidney transplant. The probability of a sibling being an HLA identical match is:

A) 0%.
B) 10%.
C) 25%.
D) 50%.
E) 75%.

**Correct Answer** **C**

**Explanation** The HLA antigens of one chromosome are termed a haplotype. Each person has two haplotypes, one haplotype inherited from each parent. Therefore, there is a 25% chance of each sibling inheriting the exact same haplotypes (HLA- identical), a 50% chance of inheriting at least one common haplotype (haploidentical), and a 25% chance of a complete HLA mismatch.

**38.** A patient who has been tolerating total parenteral nutrition for two weeks suddenly develops severe glycosuria. The most likely explanation is:

A) early development of sepsis.
B) administration of excess glucose.
C) reduction of energy needs in a stressed patient.
D) development of insulin antibodies.
E) pancreatic failure.

**Correct Answer** **A**

**Explanation** The most common cause of hyperglycemia and glycosuria in patients receiving hyperalimentation is an excess rate of glucose infusion. In a patient who is tolerating a given rate of glucose infusion and abruptly develops glycosuria, sepsis may be present. Moreover, other clinical parameters of infection may not appear for several hours.

**39.** A 19-year-old man has headaches, polydipsia, and polyuria. He has hypokalemia and an elevated peripheral vein renin. Abdominal CT scan demonstrates a 2 cm mass adjacent to or involving the upper pole of the right kidney; the left kidney is normal. The most likely diagnosis is:

A) adrenal cortical carcinoma.
B) juxtaglomerular cell tumor.
C) pheochromocytoma.
D) renal cell carcinoma.
E) aldosteronoma.

**Correct Answer** **B**

**Explanation** The findings in this patient are a classic history as well as laboratory and radiographic findings of a juxtaglomerular cell tumor. These rare, benign tumors occur most commonly in people less than 20 years of age and are curable by surgical excision. The hypokalemia results from secondary hyperaldosteronism. Patients with aldosteronomas should have suppressed plasma renin levels. These findings are not characteristic of the other tumors listed. Pheochromocytomas cause hypertension by release of sympathetic amines and do not cause hypokalemia.

**40.** At birth, the normal umbilical cord has:

A) urachus, umbilical artery, and umbilical vein.
B) one umbilical artery and one umbilical vein.
C) urachus and two umbilical arteries.
D) two umbilical arteries and one umbilical vein.
E) two umbilical veins and one umbilical artery.

**Correct Answer** **D**

**Explanation** Normal infants should have a three vessel cord: two umbilical arteries and an umbilical vein. A two vessel cord is associated with an increased incidence of urologic abnormalities.

**41.** A 35-year-old woman who has received pelvic radiotherapy and cyclophosphamide treatment for lymphoma has severe bladder bleeding requiring transfusion. Cystoscopic fulguration of bleeding areas has failed. IVP is normal except for edema of the bladder wall. Prior to instillation of silver nitrate or formalin she should have:

A) diuretics.
B) antibiotics.
C) VCUG.
D) sodium 2-mercaptoethane sulfonate (Mesna).
E) Fogarty catheters in the distal ureters.

**Correct Answer** **C**

**Explanation** Reflux of formalin or silver nitrate into the ureters may cause severe ureteral fibrosis and obstruction. A VCUG is necessary because reflux occurs in about 40% of patients with cyclophosphamide-induced cystitis. Precautions to reduce risk of caustic material reflux in such patients include small volumes of irrigant (half of bladder capacity), reverse Trendelenburg position, brisk diuresis, and Fogarty catheters placed in the distal ureters. None of these maneuvers are reliable. It may be more helpful to monitor intravesical pressure during instillation to keep pressure below that known to cause reflux. Antibiotics are of no value unless infection is present. Sodium 2-mercaptoethane sulfonate (Mesna) which detoxifies cyclophosphamide metabolites is useful for preventing chemical cystitis during cyclophosphamide administration.

**42.** Five alpha-reductase deficiency is manifested as:

A) poorly differentiated wolffian structures.
B) poorly differentiated mullerian structures.
C) gynecomastia.
D) elevated concentration of testosterone at puberty.
E) elevated dihydrotestosterone/testosterone ratio.

**Correct Answer** **D**

**Explanation** The defective conversion of testosterone to dihydrotestosterone produces a unique form of male pseudohermaphroditism. At birth, the mullerian structures are absent and testosterone-dependent wolffian structures are well differentiated. The 5-alpha-reductase enzyme defect is generally incomplete, and at puberty the plasma concentration of dihydrotestosterone, while low, is detectable. Plasma testosterone and LH are elevated while the dihydrotestosterone/testosterone ratio is abnormally low. 5-alpha-reductase deficiency is inherited as an autosomal recessive, and the enzymatic defect exhibits genetic heterogeneity.

**43.** Hypertension in Cushing's syndrome is primarily related to:

A) elevated plasma catecholamines.
B) elevated plasma aldosterone.
C) retention of water and salt.
D) ACTH-stimulated renin.
E) elevated angiotensin II.

**Correct Answer** **C**

**Explanation** Cushing's syndrome is due to glucocorticoid excess while Cushing's disease is a pituitary adenoma. Approximately 80% of patients with Cushing's syndrome have hypertension at the time of presentation. Glucocorticoids have weak mineralocorticoid effects resulting in retention of salt and water.

**44.** A 23-year-old man is referred for treatment after a left trans- scrotal orchiectomy. Pathology shows an embryonal cell carcinoma mixed with elements of seminoma. Alpha-fetoprotein, beta- hCG, and chest x-ray are normal. No inguinal lymph nodes are palpable. In addition to retroperitoneal lymph node dissection and excision of the left spermatic cord, treatment should include:

A) bilateral superficial inguinal lymph node dissection.

B) left superficial inguinal lymph node dissection.

C) biopsy of left sentinel inguinal node.

D) radiation of left inguinal nodes.

E) observation of inguinal nodes.

**Correct Answer** **E**

**Explanation** It was previously believed that scrotal surgery markedly increased the risk of local recurrence and inguinal node metastases. Further evidence now suggests that this risk has been overestimated and that a formal hemiscrotectomy or prophylactic inguinal node dissection is rarely indicated in these cases. A meta-analysis of all evaluable reported series (1182 total cases, 206 with scrotal violation) found that the risk of local recurrence increased from 0.4% to 2.9% with scrotal violation, but there was no difference in the distant recurrence or survival rates. In clinical Stage I non-seminoma, the previous scrotal scar should be widely excised at the time of the retroperitoneal lymph node dissection, along with any remaining spermatic cord. No further treatment is necessary.

**45.** A 27-year-old man with a three-week history of intermittent mild right flank pain has a radiolucent 6 x 8 mm filling defect in the distal one-third of his right ureter associated with mild hydroureteronephrosis on an IVP. Urinalysis shows pH 5.5, numerous urate crystals, 8-10 RBC/hpf and 2-3 WBC/hpf. A urine culture shows no bacterial growth. The most appropriate management is:

A) oral allopurinol.

B) oral urinary alkalinization.

C) ESWL.

D) percutaneous nephrostomy and bicarbonate infusion.

E) ureteroscopy and stone extraction.

**Correct Answer** **B**

**Explanation** This patient will be unlikely to require any surgical therapy of his ureteral uric acid stone. Oral bicarbonate therapy should dissolve the stone within a short period of time if the urine pH can be maintained above 6.5. If the patient is unable to take bicarbonate due to GI intolerance, I.V. sodium bicarbonate has been shown to lead to rapid dissolution of stones although infusion of bicarbonate via a percutaneous nephrostomy tube might be a suitable alternative in a patient who might not be able to tolerate a high sodium load. Oral allopurinol may be useful in conjunction with oral alkalinization for future prophylaxis of urate stones but will not be useful acutely.

**46.** Two weeks following an episode of aphasia associated with right hemiparesis, a 76-year-old man has increasing lethargy and is febrile and oliguric. The serum creatinine is 2 mg/dl, BUN 70 mg/dl, Na 148 mEq/l, K 4.0 mEq/l, CO<sub>2</sub> 21 mEq/l, and chloride 112 mEq/l. The serum calcium is 8.3 mg/dl and the serum uric acid is 12 mg/dl. The most likely diagnosis is:

A) dehydration.
B) obstructive uropathy.
C) hypertensive nephropathy.
D) chronic pyelonephritis.
E) uric acid nephropathy.

**Correct Answer** **A**

**Explanation** Increasing lethargy, mild fever and oliguria are signs of dehydration. This patient's BUN to creatinine ratio suggests that he has a prerenal cause for his fluid and electrolyte problem.

**47.** A 55-year-old man with hypertension and diabetes mellitus has acute onset of right abdominal pain. Serum creatinine is 2.1 mg/dl. Abdominal ultrasound reveals an 8 cm right-sided adrenal mass. Urinary catecholamines and 17-ketosteroid levels are normal. The next step is:

A) non- contrast CT scan.

B) adrenal arteriography.

C) MRI scan.

D) adrenal venography.

E) fine- needle aspiration.

**Correct Answer** **C**

**Explanation** Unilateral adrenal hemorrhage in adults is usually due to trauma, severe systemic illness or anticoagulation. Adrenal hemorrhage may be detected due to acute onset of symptoms (i.e. pain, hypotension) or it may be discovered incidentally. Unilateral hemorrhage is usually associated with normal adrenal function. The differential diagnosis includes primary adrenal cancers (adrenocortical carcinoma or pheochromocytoma) or metastases. MRI scan appears to be more accurate than other imaging modalities (i.e. CT scan or ultrasound) for diagnosing adrenal hemorrhage. High signal intensity on T-1 weighted images, especially if the signal is located peripherally, and heterogenous signal intensity on T-2 weighted images is most consistent with hemorrhage alone rather than bleeding due to malignancy. Enhancement after administration of gadolinium and nodularity are consistent with hemorrhage due to neoplasm.

**48.** The most important factor for maintaining the competency of an intussuscepted ileal nipple valve in a continent urinary reservoir is:

A) length of the efferent limb.
B) an 8 cm nipple length.
C) choice of intestinal segment for the reservoir.
D) location of stoma.
E) fixation of nipple with staples.

**Correct Answer** **E**

**Explanation** To create an intussuscepted ileal valve, the mesentery is removed from an 8 cm segment of ileum. After intussusception into the pouch, a nipple length of 4 cm is achieved. Although removal of the mesentery is an important step, maintaining the nipple length is achieved by fixing the nipple with several rows of staples. Detubularized intestine is preferred for the reservoir, but the type of segment (large or small intestine) does not effect the valve construction. Stomal location is not a factor.

**49.** Sperm capacitation is induced by:

A) prostatic fluid.
B) epididymal enzymes.
C) follicular fluid.
D) seminal vesicle fluid.
E) acrosin.

**Correct Answer** **C**

**Explanation** Spermatozoa must undergo some physiologic changes in the female genital tract before they gain the ability to fertilize ova. Although poorly characterized, this process, termed capacitation, is thought to be related to changes in the sperm plasma membrane. Capacitation precedes the acrosome reaction and the release of acrosin. It can be induced in vitro by removal of the sperm from the seminal plasma, which inhibits capacitation, and by incubating the sperm with follicular fluid. Epididymal enzymes are not thought to play a role.

**50.** A 67-year-old man with hematuria undergoes right distal ureterectomy and ureteral reimplantation for a small, Grade I noninvasive transitional cell carcinoma of the ureter. Four years later, urinary cytologies reveal malignant cells. IVP reveals a large, irregular sessile filling defect in the right renal pelvis with a normal left kidney. CT scan confirms a non- calculous renal pelvic mass and no lymphadenopathy. Cytoscopic examination is normal. The next step is:

A) right brush biopsy.
B) right pyeloureteroscopy.
C) right nephroureterectomy.
D) ureteroscopic resection of the tumor.
E) percutaneous nephrostomy and BCG irrigation.

**Correct Answer** **C**

**Explanation** The findings in this patient suggest a large invasive transitional cell carcinoma of the right renal pelvis which has probably been present for at least four years and seeded the original right distal ureteral tumor. The patient has normal contralateral renal function, and bilateral upper tract tumors are very rare. Right nephroureterectomy is the appropriate treatment for this patient. Brush biopsy and pyeloureteroscopy will not add additional information beyond the cytology and intravenous urography findings; these procedures along with percutaneous nephrostomy expose the patient to complications including bleeding, ureteral perforation and tumor spillage.

**51.** A 36-year-old man with a prosthetic heart valve is scheduled for cystoscopy and internal urethrotomy. He is allergic to penicillin. The best prophylactic antibiotic regimen is:

A) ciprofloxacin.
B) cephalothin and gentamicin.
C) ceftriaxone.
D) vancomycin and gentamicin.
E) aztreonam.

**Correct Answer** **D**

**Explanation** There is no question that antimicrobial prophylaxis against infectious endocarditis should be given to patients with prosthetic valves or valvular heart disease who are having genitourinary manipulations (transurethral genitourinary procedures, including catheterization, catheter manipulation, cystoscopy, urethral dilation). These guidelines are published in many places. In adults allergic to penicillin, vancomycin 1 gram I.V. to infuse slowly over one hour plus gentamicin (1.4 mg/kg) I.V. given thirty minutes to one hour before the procedure are administered and both drugs repeated once eight hours later.

**52.** Six months after sustaining a gunshot wound to the cauda equina, a 50-year-old man is unable to urinate. Perineal sensation is diminished, the bulbocavernosus reflex is absent, and anal sphincter tone is diminished. Urodynamic studies reveal a 800 ml bladder capacity with no evidence of contractile activity and a maximum filling pressure of 12 cm H<sub>2</sub>O. Cystoscopy reveals a large obstructing prostate with 2+ trabeculation of the bladder. Optimal treatment is:

A) clean intermittent catheterization.

B) clean intermittent catheterization and anticholinergics.

C) bethanechol chloride.

D) bethanechol chloride and alpha-adrenergic antagonists.

E) transurethral resection of the bladder neck and prostate.

**Correct Answer** **A**

**Explanation** Paralysis of the detrusor can be produced by damage to the conus medullaris. Generally, there is some laxity of the anal sphincter with a varying degree of flaccid paralysis of the lower extremities in conjunction with depressed or absent deep tendon reflexes. The bulbocavernosus reflex is usually absent or depressed. Voiding is best attempted by abdominal muscle contraction or the Crede maneuver. However, at best, this results in a dribbling or stress-type incontinence. Residual urine is the rule. Urodynamic evaluation generally shows detrusor areflexia and absent or diminished sphincter EMG activity. Denervation potentials are often recorded from the striated sphincter. Pharmacologic attempts to produce micturition by stimulating a bladder contraction or by decreasing outlet resistance have been unsuccessful. A transurethral resection of the bladder outlet will at best produce a form of stress incontinence, which will be present whether the patient attempts to void by straining or simply accidentally raises the intravesical pressure. Intermittent self-catheterization is an ideal form of management for these patients. The risk

**53.** A 36-year-old infertile man had a right inguinal herniorrhaphy at age four years and a left varicocelectomy three years ago. His testicular volume is 30 ml on the right and 16 ml on the left without evidence of a varicocele. Semen analysis reveals normal ejaculate volume, 3 million sperm/ml, and 20% motility. Serum FSH is normal and antisperm antibody testing is positive. The next step is:

A) bilateral testicular biopsy.
B) scrotal color Doppler ultrasonography.
C) scrotal exploration and vasography.
D) transrectal ultrasonography.
E) venography.

**Correct Answer** **C**

**Explanation** The patient has severe oligospermia with unilateral testicular atrophy and a normal serum FSH. This constellation of clinical findings and a history of prior inguinal surgery on the side of a normal sized testis should suggest the possibility of unilateral vasal obstruction. The few sperm seen on semen analysis may be coming from the unobstructed atrophic left testis. The finding of active spermatogenesis upon testicular biopsy is not diagnostic for obstruction in oligospermic patients as is the case in azoospermia. Scrotal exploration and vasography is the only method that will accurately establish the diagnosis of obstruction.

**54.** A 27-year-old woman with autosomal dominant polycystic kidney disease continues to experience fever and flank pain despite two weeks of appropriate oral antimicrobial therapy for an E. Coli UTI. A urine culture reveals no growth. The next step is:

A) percutaneous cyst aspiration.
B) IVP.
C) CT scan.
D) retrograde pyelogram.
E) isotope renogram.

**Correct Answer** **C**

**Explanation** Upper UTI's are common in patients with polycystic kidney disease, especially women. These can be divided into parenchymal and cyst infections. The parenchymal infections respond better than cyst infections to treatment. If the patient does not respond to an antibiotic or the urine culture is negative, one must consider that the infection may be present in a non-communicating cyst. A CT scan appears to be the diagnostic procedure of choice for renal abscesses, particularly in difficult cases such as polycystic kidney disease, since it provides excellent delineation of the tissue. An IVP and retrograde pyelogram are not usually helpful in patients with polycystic kidney disease. Radionuclide imaging with gallium and indium is sometimes useful in evaluating patients with renal abscesses. Percutaneous cyst aspiration is the treatment of choice, once the diagnosis is made.

**55.** Urinary incontinence recurring within three months of a successful needle suspension procedure for stress incontinence due to urethral hypermobility is most likely due to:

A) detrusor instability.
B) suture breakage.
C) intrinsic sphincter deficiency.
D) overflow incontinence.
E) sutures cutting through pubocervical fascia.

**Correct Answer** **E**

**Explanation** Early failures of suprapubic procedures can be traced to improper surgical technique. Hilton and Mayne (1991) and Kirby and Whiteway (1989) report that 50% of early failures are due to sutures cutting through the fascia because they were tied too tight.

**56.** A 35- year- old man with Peyronie's disease is able to achieve an erection adequate for intercourse with minimal discomfort. The initial treatment should be:

A) reassurance.
B) oral Vitamin E.
C) intralesional Vitamin E.
D) intralesional steroids.
E) intralesional collagenase.

**Correct Answer** **A**

**Explanation** The patient has minimal discomfort and his erections are adequate for intercourse. Vitamin E is useful in patients with pain while intralesional agents are generally reserved for severe curvature.

**57.** Stevens-Johnson syndrome or toxic epidermal necrolysis, a disease characterized by fever, dark-red cutaneous macular rash, mucosal erosions, and conjunctival lesions, is most commonly associated with:

A) nitrofurantoin.
B) trimethoprim-sulfamethoxazole.
C) doxycycline.
D) amphotericin.
E) fluconazole.

**Correct Answer** **B**

**Explanation** Stevens-Johnson syndrome or toxic epidermal necrolysis, is characterized by fever, influenza-type symptoms, a macular rash (sometimes with necrotic centers), conjunctival lesions, and mucosal erosions and is often drug-induced and begins one to three weeks after initiation of therapy. Although more than 100 compounds have been implicated, the most common causes are trimethoprim-sulfamethoxazole, sulfadoxine and pyrimethamine. Less commonly, cephalosporins, vancomycin and fluoroquinolones have been implicated. Treatment includes withdrawal of responsible drugs, skin care (placement in a burn unit may be necessary in those with extensive skin involvement), fluid replacement, pain control, nutritional support and antibacterial treatment.

**58.** The most common long-term complication of clean intermittent catheterization in spinal cord injured patients is:

A) vesicoureteral reflux.
B) squamous metaplasia.
C) bladder calculi.
D) chronic pyelonephritis.
E) urethral stricture.

**Correct Answer** **E**

**Explanation** Clean intermittent catheterization is the preferred bladder management in most spinal cord injury patients and is associated with a low incidence of vesicoureteral reflux, squamous metaplasia of the bladder lining, bladder calculi, and pyelonephritis. However, local trauma to the urethral wall induced by repeated introduction of the catheter has been reported, and strictures and false passages seem to appear after several years in some male patients.

**59.** A 55-year-old man with a renal transplant undergoes percutaneous antegrade removal of a midureteral calculus. Two days following stent removal, the patient develops a fever of 40 deg C, chills, hypotension, and abdominal pain. Ultrasound confirms the presence of a 3 X 4 cm fluid collection surrounding the transplant pelvis and ureter. After intravenous antibiotics, the next step is:

A) ureteral stent placement.

B) percutaneous diversion and drainage.

C) percutaneous drainage of the fluid collection.

D) urethral catheter drainage.

E) open ureteral repair.

**Correct Answer** **B**

**Explanation** Currently, the incidence of urological complications after transplantation varies from 2% to 10%. The fistula described, represents a secondary, rather than a primary, fistula. The management of primary fistulas is controversial. Selected patients with distal and very limited fistulas may be managed with percutaneous nephrostomy with or without percutaneous drainage of the urinoma and stent placement. More extensive ureteral loss or proximal fistulas may be managed best with open repair. In the present case, antegrade nephrostomy would allow for better definition of the site and extent of injury, control of infection, stabilization of renal function (if obstruction is present) and, probably, placement of a ureteral stent. Although a retrograde approach could be attempted, intubation of a transplant ureteral orifice is difficult and would likely require anesthesia. In the presence of possible infection or an unstable patient, complex procedures should be avoided.

**60.** A 27-year-old man is being evaluated for infertility. He had a prior orchiopexy on the right and has a much smaller testis on the right compared to a normal size testis on the left. Bilateral testicular biopsies indicate carcinoma in situ in the right testis and normal findings on the left side. The best management is:

A) testicular ultrasound studies every four to six months.
B) right radical orchiectomy.
C) low-dose radiotherapy.
D) short-course chemotherapy.
E) repeat biopsy in six months.

**Correct Answer** **B**

**Explanation** Patients with identified carcinoma in situ have a significant risk for developing invasive carcinoma. In one study of infertile men with carcinoma in situ, an invasive germ cell tumor developed in 2/3 - 3/4 of these patients. An orchiectomy is recommended rather than radiotherapy or chemotherapy. There should be little risk of metastases at this time.

**61.** The most common etiology for failure of an AMS artificial urinary sphincter with a narrow cuff backing is:

A) cuff erosion.
B) pump malfunction.
C) tube leak.
D) tube kink.
E) pump leak.

**Correct Answer** **A**

**Explanation** The most common etiology for mechanical failure prior to the availability of the narrow backing cuff sphincter was a cuff leak. The incidence of cuff leakage was reduced from 9% to 2% with the development of a narrow cuff backing. The most common cause for failure with the narrow cuff backing sphincter is cuff erosion (6.5%).

**62.** A 66-year-old man is scheduled for elective repair of a 7 cm abdominal aortic aneurysm. CT scan shows peri-aneurysmal fibrosis, a normal right kidney, and marked left hydronephrosis with cortical loss. Renogram demonstrates 25% function on the left, and a retrograde pyelogram reveals entrapment of a 6 cm segment of the mid- left ureter. The serum creatinine is 1.6 mg/dl. The most appropriate treatment is aneurysm repair and:

A) left ureterolysis.
B) delayed ureterolysis.
C) steroid therapy.
D) left nephrectomy.
E) balloon dilation.

**Correct Answer** **D**

**Explanation** The management of ureteral obstruction in association with inflammatory abdominal aortic aneurysms is controversial. Peri-aneurysmal fibrosis has been reported to subside in some cases after aneurysm repair and there have been some who have recommended steroid treatment for this condition. Since the right kidney is functioning normally and there is a long ureteral stricture, left nephrectomy should be strongly considered. Ureterolysis concomitantly with aneurysm repair would be likely to necessitate the use of an ileal ureter or autotransplantation which would be ill-advised in this setting.

**63.** A 52-year-old man with recurrent nephrolithiasis undergoes a metabolic evaluation with 24- hour urinary values revealing: calcium 360 mg (normal < 250 mg/24 hours), uric acid 640 mg (normal < 700 mg/24 hours), oxalate 30 mg (normal < 40 mg/24 hours), and citrate 430 mg (normal > 320 mg/24 hours). A fasting urinary calcium level remains elevated. The best dietary recommendation is:

A) reduce salt consumption.

B) reduce fat consumption.

C) increase protein consumption.

D) reduce caloric intake.

E) reduce calcium consumption.

**Correct Answer** **A**

**Explanation** Generalized dietary recommendations include increased fluid intake to ensure voided volumes of 1.5-2.0 liters per day, reduced salt consumption (especially with hypercalciuria), and limited protein consumption (to reduce the postprandial metabolic acidosis and calcium mobilization from bone). Calcium reduction in non-dietary dependent hypercalciuria may be counterproductive. Fat consumption has no impact on urinary stone disease.

**64.** A woman in her second trimester of pregnancy has persistent malodorous, homogenous, white vaginal discharge of pH 5.5, and vaginal itching. Microscopic examination of the discharge reveals epithelial cells with indistinct membranes. The best treatment is:

A) oral clotrimazole.
B) oral metronidazole.
C) vaginal clindamycin.
D) vaginal metronidazole.
E) acetic acid douche.

**Correct Answer** **C**

**Explanation** Bacterial vaginosis may be diagnosed by clinical criteria or gram stain. Clinical criteria include three of the following four criteria: homogeneous, white discharge; presence of 'clue' cells on microscopic examination; pH greater than 4.5; a fishy odor to the discharge after the addition of 10% potassium hydroxide. Bacterial vaginosis has been associated with pelvic inflammatory disease and adverse outcomes of pregnancy (i.e. preterm labor, premature rupture of membranes). The recommended regimen for treatment is metronidazole 500 mg orally, 2 times a day for 7 days. Alternative regimens include metronidazole 2 gm orally, clindamycin 2% cream, metronidazole 0.75% gel, or clindamycin 300 mg orally, 2 times a day for 7 days. Metronidazole is contraindicated in pregnancy. Clindamycin should be used in such situations.

**65.** The finding most commonly associated with obstructed or congenitally absent seminal vesicles is:

A) hyperviscous semen.
B) semen pH greater than 7.
C) reduced motility.
D) vasal agenesis.
E) atrophic testes.

**Correct Answer** **D**

**Explanation** Vasal agenesis is associated with seminal vesicle agenesis. The ejaculate volume is usually low and the semen does not coagulate due to the absence of substances from the seminal vesicles responsible for coagulation. Since fructose is produced by the seminal vesicles, one would expect to see low fructose levels. The pH of prostatic secretions is usually less than 7. Since the pH of seminal vesical secretions is greater than 7, one would expect the pH to be less than 7 in patients with congenitally absent seminal vesicles.

**66.** Decreased renal blood flow following acute total unilateral ureteral obstruction is mediated by:

A) aldosterone.
B) atrial natriuretic factor.
C) prostacyclines.
D) thromboxane A<sub>2</sub>.
E) 2 angiotensin 1.

**Correct Answer** **D**

**Explanation** Renin and thromboxane A2 levels are increased 2 to 5 hours following total acute unilateral ureteral obstruction. This temporarily results in decreased renal blood flow. Prostacyclines and atrial natriuretic factor are vasodilatory factors released during ureteral obstruction. Although aldosterone and angiotensin-1 may also be elevated secondary to increased renin, they do not produce reduced blood flow.

**67.** Prostaglandin E1 relaxes corporal cavernosal smooth muscle by:

A) releasing nitric oxide.
B) blocking calcium efflux.
C) raising cyclic GMP.
D) raising cyclic AMP.
E) opening of potassium channels.

**Correct Answer** **D**

**Explanation** While release of nitric oxide, blocking Ca+2 efflux, raising cGMP or opening potassium channels all relax penile smooth muscle, Prostaglandin E1 specifically increases cAMP. This knowledge is important since other agents may work at separate sites with the same or opposing results.

**68.** Detrusor-sphincter dyssynergia may occur with:

A) diabetic peripheral neuropathy.
B) sacral (S2-4) cord lesion.
C) thoracic (T2-3) cord lesion.
D) left cerebral subarachnoid bleed.
E) para- sagittal meningioma.

**Correct Answer** **C**

**Explanation** Detrusor sphincter dyssynergia occurs with suprasacral spinal cord injury. Peripheral nerve lesions or lesions above the level of the pons do not manifest this disease process.

**69.** The treatment of idiopathic oligospermia with human chorionic gonadotropin is most likely to result in:

A) elevation of serum testosterone.
B) increased sperm concentration.
C) improved sperm motility.
D) increased pregnancy rate.
E) increased seminal volume.

**Correct Answer** **A**

**Explanation** Treatment of oligospermic patients with human chorionic gonadotropin does not generally achieve consistent improvement in sperm concentration, sperm motility, or pregnancy rate. Estradiol and testosterone levels do rise, however.

**70.** Ultrasonography of a newborn boy with an abdominal mass shows an enlarged kidney containing large cystic spaces which do not appear to communicate with one another. Which test is best to establish the diagnosis of multicystic kidney:

A) CT scan.
B) IVP.
C) retrograde pyelogram.
D) isotope renography.
E) antegrade pyelogram.

**Correct Answer** **D**

**Explanation** The diagnosis of multicystic kidney and its differentiation from hydronephrosis is usually suggested by ultrasonography. Diagnostic accuracy is improved further by renal scanning. In most cases, hydronephrosis will display prominent blood flow and renal function whereas the multicystic kidney will not. A CT scan and IVP cannot make this differentiation. A retrograde pyelogram is inappropriately invasive. While an antegrade pyelogram can provide discriminating information, it is likewise invasive and not necessary in most cases.

**71.** The best method to decrease the rate of catheter- associated UTI's in hospitalized adults is:

A) antimicrobial prophylaxis.
B) one- way valves in drainage systems.
C) addition of antimicrobials to drainage bag.
D) antimicrobial or silver impregnated catheters.
E) enforcement of closed drainage systems.

**Correct Answer** **E**

**Explanation** Prevention of catheter-associated urinary tract infections remains the most unsolved problem in hospital infection control. The first step is to avoid unnecessary catheterization and remove the catheter when it is no longer needed. Although many maneuvers, techniques and devices have been tested to reduce the incidence of catheter associated infections in hospital wards, the best cost-effective step remains the strict enforcement of a completely closed catheter drainage system.

**72.** A 62-year-old woman has a muscle invasive squamous cell carcinoma of the bladder trigone. Metastatic evaluation is negative. The most appropriate treatment is:

A) definitive radiation therapy (7000 rads).
B) cystectomy and adjuvant chemotherapy.
C) cystourethrectomy after radiation therapy (4000 rads).
D) chemotherapy with cisplatin, methotrexate and doxorubicin.
E) cystourethrectomy and excision of the anterior vaginal wall.

**Correct Answer** **E**

**Explanation** Radiation therapy and chemotherapy usually are ineffective in the treatment of squamous cell carcinoma of the bladder. Surgical excision of the urethra and anterior vaginal wall is the preferred treatment.

**73.** A 55-year-old woman develops diarrhea and hyperchloremic metabolic acidosis six weeks after cystectomy and construction of a continent urinary reservoir (Indiana pouch) for bladder cancer. Pouchogram demonstrates contrast in the right colon without bowel dilation. A catheter is placed in the reservoir. The best initial management is:

A) hyperalimentation.
B) laparotomy and closure of the fistula.
C) bilateral percutaneous nephrostomy placement.
D) low residue diet.
E) biopsy of the fistula tract.

**Correct Answer** **D**

**Explanation** Entero-reservoir fistulas are uncommon complications of continent urinary reservoir construction. They may be more common after pelvic radiation therapy. In such patients, interposition of omentum between the reservoir and the remainder of the intestinal tract may reduce the likelihood of this complication. Persistent hyperchloremic acidosis is uncommon after continent reservoir construction and its presence should raise suspicion that a fistula may be present. Although open correction may be required, many will close spontaneously with catheter drainage of the reservoir and use of a low residue diet. If this proves unsuccessful one would then proceed with hyperalimentation.

**74.** Oligohydramnios is often associated with:

A) pulmonary hypoplasia.
B) imperforate anus.
C) tracheoesophageal fistula.
D) myelomeningocele.
E) anencephaly.

**Correct Answer** **A**

**Explanation** The reasons for pulmonary hypoplasia associated with oligohydramnios remain to be fully defined. It may represent a common teratogenic effect of renal and pulmonary maldevelopment, or abnormal lung fluid drainage due to lower intrauterine pressures. The time of onset of oligohydramnios is an important predictor of the effect on pulmonary maldevelopment.

**75.** Percutaneous nephrostolithotomy is contraindicated in the presence of:

A) untreated UTI.
B) multiple renal cysts.
C) ureteropelvic junction obstruction.
D) calyceal diverticulum.
E) solitary kidney.

**Correct Answer** **A**

**Explanation** Untreated UTI is a contraindication to percutaneous nephrolithotomy. Solitary and horseshoe kidneys, as well as those with cysts, calyceal diverticula, or ureteropelvic junction obstruction may undergo percutaneous nephrostolithotomy. In addition, renal cysts, ureteropelvic junction obstruction, and calyceal diverticula may be treated percutaneously.

**76.** A 55-year-old man has a papillary tumor in a bladder diverticulum. Random bladder biopsies are negative but a cold- cup biopsy of the tumor reveals Grade II, Stage A (T1) transitional cell carcinoma. The best treatment is:

A) transurethral resection.
B) intravesical BCG.
C) partial cystectomy.
D) radical cystectomy.
E) laser ablation.

**Correct Answer** **C**

**Explanation** The patient by definition has invasive transitional cell carcinoma by virtue of the stage. Adequate staging of a bladder tumor cannot be achieved without transurethral resection, but, in the face of a diverticulum, this is not possible. A partial cystectomy will provide accurate staging and determine if further therapy is necessary.

**77.** The renal toxicity of radiocontrast material is due to:

A) tubular necrosis.
B) afferent arteriolar constriction.
C) intrarenal vasoconstriction.
D) intrarenal vasoconstriction and tubular necrosis.
E) efferent arteriolar dilation and tubular necrosis.

**Correct Answer** **D**

**Explanation** Two qualities of radiocontast agents have been evoked to explain their renal toxicity. First, contrast agents are powerful renal vasoconstrictors and may cause a severe reduction in renal blood flow. Second, in vitro studies have demonstrated that these agents are toxic to renal tubular cells. This toxicity is enhanced by the hypoxia that results from diminished renal blood flow.

**78.** A 65-year-old man has a large renal mass. An abdominal CT scan and a bone scan show no metastases. Serum alkaline phosphatase and liver function studies are normal, and the serum calcium is 11.2 mg/dl. The next step is:

A) serum parathyroid related protein.
B) ultrasound of neck.
C) MRI scan of abdomen.
D) MRI skeletal survey.
E) chest x- ray.

**Correct Answer** **E**

**Explanation** Renal cell carcinomas are associated with a variety of paraneoplastic syndromes including hypercalcemia which is thought to be due to tumor production of a parathyroid related protein. This can be due to the production of this substance by the primary tumor, but is frequently seen in patients with metastatic disease. In the absence of metastatic disease, however, resection of the primary should be undertaken. The measurement of serum parathyroid related protein would not change management in this case. The most likely site of metastatic disease described here is in the chest so a chest x-ray or CT scan should be obtained.

**79.** In the female, the round ligament:

A) lies in the base of the broad ligament.
B) carries with it the vascular supply of the uterus.
C) carries with it the vascular supply of the ovaries.
D) connects to the upper part of the uterus.
E) penetrates the femoral ring to lie within the labia.

**Correct Answer** **D**

**Explanation** Each round ligament arises from the top of the side of the uterus and passes anteriorly and laterally towards the deep inguinal ring. The round ligaments run in the upper part of the broad ligament to the uterus while all other ligaments run through the base to the uterus and cervix. The round ligament is encountered during radical cystectomy in the female.

**80.** During maximal antidiuresis, the concentration of calcium within the kidney is highest in:

A) Bowman's space.
B) Henle's loop.
C) the proximal convoluted tubule.
D) the distal convoluted tubule.
E) the collecting duct.

**Correct Answer** **E**

**Explanation** Maximal water reabsorption and maximal concentrations of urinary constituents (solutes), including calcium, occur in the collecting ducts. One theory of stone formation suggests that this may be the reason that urinary calculi appear to form in the collecting ducts.

**81.** The metabolic defect primarily responsible for urolithiasis in a patient with short bowel syndrome is:

A) systemic acidosis with hypocitraturia.
B) absorptive hyperoxaluria.
C) hypomagnesiuria.
D) secondary hyperparathyroidism.
E) absorptive hypercalciuria.

**Correct Answer** **B**

**Explanation** The hyperoxaluria in this syndrome results from fat malabsorption which leads to saponification of enteric calcium. As such, there is not enough enteric calcium to effectively bind enteric oxalate. Accordingly, oxalate remains in a more soluble state and is passively absorbed in the colon. In addition, the presence of bile acids and fatty acids in the colon appears to increase the permeability of the colon to oxalate.

**82.** A 22-year-old football player develops gross hematuria after being struck in the right flank. An IVP with tomography shows a normal left kidney, but delayed function on the right and incomplete visualization of the renal cortical margin. No extravasation is present. The bladder appears normal and the patient is clinically stable. The next step is:

A) surveillance.
B) CT scan.
C) renal arteriography.
D) cystogram.
E) retrograde pyelogram.

**Correct Answer** **B**

**Explanation** Although IVP is sensitive for the detection of renal injury, it is most often nonspecific with regard to the extent of injury. In cases of renal trauma where the IVP is indeterminate and the patient is clinically stable, CT scan should be performed. CT scan is sensitive, specific, and allows for confident surveillance of many properly staged minor and major renal injuries.

**83.** A seven-year-old girl with bilateral Grade III/V reflux and recurrent UTI has an elevated blood pressure, proteinuria, and inability to concentrate urine. The left kidney is small. Following successful reimplantation, she is most likely to have:

A) reduction in frequency of cystitis.
B) improvement in renal concentrating ability.
C) catch-up growth of the left kidney.
D) normalization of the blood pressure.
E) reduction in proteinuria.

**Correct Answer** **B**

**Explanation** The incidence of recurrent urinary tract infection appears to be unaffected by the surgical correction of reflux, as it is similar in children without reflux, in those with previously corrected reflux and in those currently refluxing. After reflux surgery, accelerated growth may occur, especially when the reflux is bilateral, but the affected kidney will usually not reach the size of its mate. Hypertension and proteinuria are not casually related to reflux per se but to the resulting parenchymal injury. Consequently, they are generally not influenced by antireflux surgery. However, diminished concentrating ability is seen in children with reflux and usually improves after reflux spontaneously resolves or is surgically corrected.

**84.** The first measurable change in renal function in a patient with bilateral hydronephrosis is:

A) urinary concentrating ability.
B) glomerular filtration rate.
C) tubular secretion of creatinine.
D) urinary excretion of ammonia.
E) decreased clearance of inulin.

**Correct Answer** **A**

**Explanation** Distal tubular functions such as urinary concentration and acidification are the earliest functional abnormalities in obstruction.

**85.** A 30-year-old man has a one week history of priapism after a straddle injury. The corpora were aspirated, and a blood gas reveals a pH of 7.35, pO<sub>2</sub> of 93 mm Hg, and a pCO<sub>2</sub> of 30 mm Hg. He is treated twice with intracorporeal phenylephrine irrigation. Each time there is initial detumescence and rapid return to the erect state. The best treatment is:

A) methylene blue irrigation.

B) a glandular-cavernosal shunt.

C) epinephrine irrigation.

D) oral terbutaline.

E) transarterial embolization.

**Correct Answer** **E**

**Explanation** The patient's history and clinical findings are all consistent with a nonischemic traumatic priapism due to an injury of the cavernosal artery with fistula formation. Although methylene blue irrigation, shunt, epinephrine irrigation, and oral terbutaline are all effective forms of treatment for priapism, the best treatment for traumatic priapism is arteriography to identify the injured vessel and then embolization. Observation is an alternative option.

**86.** A 62-year-old man develops urinary incontinence three months after suffering a cerebrovascular accident. Urodynamic evaluation will most probably demonstrate detrusor hyperreflexia and:

A) smooth sphincter synergia, striated sphincter dyssynergia.
B) smooth sphincter synergia, striated sphincter synergia.
C) smooth sphincter dyssynergia, striated sphincter synergia.
D) smooth sphincter incompetence, striated sphincter synergia.
E) smooth sphincter incompetence, striated sphincter incompetence.

**Correct Answer** **B**

**Explanation** After the initial acute episode during which acute urinary retention is common, a variable degree of recovery occurs and any residual neurological deficit becomes apparent over a few weeks or months. During this period symptoms of persistent bladder dysfunction may become apparent. A problem with impaired voluntary urinary control will generally have detrusor hyperreflexia as a urodynamic correlate with symptoms of frequency, nocturia and urgency with or without urge incontinence. The bladder-neck opens normally with the involuntary bladder contraction, and unless the patient tries to voluntarily inhibit bladder contraction by forcibly contracting the striated sphincter, the striated sphincter is likewise synergic. Detrusor-striated sphincter dyssynergia is extremely rare or non-existent in patients with isolated lesions above the brain stem.

**87.** During anatrophic nephrolithotomy, methylene blue may be injected to help define the line of intersegmental nephrotomy which lies:

A) in the mid-sagittal plane.
B) between apical and posterior segments.
C) between anterior and posterior segments.
D) between basilar and anterior segments.
E) along Brodel's white line.

**Correct Answer** **C**

**Explanation** The line for anatrophic nephrotomy incision extends from just above the basilar segment, between the anterior and posterior segment, to just below the apical segment and lies about one centimeter posteromedial to Brodel's white line.

**88.** A boy with high imperforate anus undergoes a diverting colostomy. Over the next six months he has recurrent UTIs. Ultrasonography shows a normal spine and normal upper urinary tract. The most likely cause for these urinary infections is:

A) rectourethral fistula.
B) rectovesical fistula.
C) vesicoureteral reflux.
D) neurogenic bladder.
E) urethral stricture.

**Correct Answer** **A**

**Explanation** Early developmental arrest of the urorectal septum in the male will produce a high supralevator type of imperforate anus which often leads to communication between the rectum and the prostatic urethra. Bacterial contamination across this fistula may cause recurrent urinary tract infections and require prophylactic antibiotics. Neurogenic bladder occurs in about 10% of cases as a result of lumbosacral spine anomalies or from injury during pull-through surgery. Reflux may be associated with this anomaly but it does not actually cause urinary tract infection.

**89.** A male fetus has a duplex left system with marked hydroureteronephrosis and a thin rim of upper pole parenchyma, marked hydroureteronephrosis of the right system, and a large ureterocele in the bladder. The likely diagnosis is:

A) posterior urethral valves.
B) megacystis-megaureter syndrome.
C) ectopic ureterocele.
D) ectopic ureter and pseudo-ureterocele.
E) primary obstructive megaureter.

**Correct Answer** **C**

**Explanation** The description of the anatomy on the left side is diagnostic of an ectopic ureterocele with a dilated upper pole. These ureteroceles may cause obstruction of the lower pole directly, or indirectly through obstruction of the bladder outlet due to prolapse. Choices a, b, and e are theoretically possible, yet the associations are rare and invoke two diagnoses. Choice d is highly unlikely, although it has been reported.

**90.** Impaired ammonia production by the kidney is most likely to result in:

A) calcium oxalate renal lithiasis.
B) decreased urine titratable acidity.
C) impaired urea excretion.
D) systemic alkalosis.
E) metastatic calcification.

**Correct Answer** **B**

**Explanation** Ammonia production allows the kidney to rid itself of acid without lowering the pH (titratable acidity). Lack of ammonia production can result in a systemic acidosis which may be followed by demineralization of bones and uric acid lithiasis.

**91.** A 55-year-old man with a ten pound weight loss has a clinical T3 (C) prostate nodule. Transrectal biopsy reveals a small cell carcinoma of the prostate. Metastatic workup is negative. The best management is:

A) radical prostatectomy.
B) LH- RH agonist.
C) cystoprostatectomy.
D) external beam radiotherapy.
E) VP- 16 and cis- platinum.

**Correct Answer** **E**

**Explanation** Small cell carcinoma of the prostate carries a very poor prognosis. In most patients, the course is rapidly fatal. Most patients present with rapid onset of symptoms indistinguishable from other causes of bladder outlet obstruction. Systemic constitutional symptoms are reported in about 10% of cases. Chemotherapy in combination with surgery or radiation appears to be the most important component of management. Cis-platinum and etoposide (VP-16) is the most commonly used combination. Recently, ifosfamide has shown significant activity against small cell lung carcinoma with a response rate of 50% as single agent therapy and 70% to 90% in combination with etoposide and/or carboplatinum.

**92.** Which urine sample should be collected for pH testing to establish the diagnosis of renal tubular acidosis:

A) fasting.
B) postprandial.
C) diurnal.
D) nocturnal.
E) hydrated.

**Correct Answer** **A**

**Explanation** Initial screening for renal tubular acidosis can be done by measuring the pH of the second voided morning urine specimen after the patient has fasted overnight. The second voided specimen is better than the first because the first voided specimen may have an elevated pH as a result of pre-fasting food intake. If the urinary pH is not less that 5.5, then an ammonium chloride loading test is indicated.

**93.** The best treatment to decrease total body potassium in a patient with acute renal failure and a serum potassium of 6.7 mEq/l is:

A) insulin and glucose.
B) bicarbonate.
C) calcium gluconate.
D) normal saline.
E) sodium polystyrene sulfonate (Kayexalate).

**Correct Answer** **E**

**Explanation** Hyperkalemia is a common electrolyte disturbance observed in acute renal failure. Parenteral insulin/glucose and bicarbonate will shift potassium into cells and temporarily correct hyperkalemia but does not decrease total body potassium. Calcium ameliorates the effect of hyperkalemia on the cardiac electrical potential. Sodium polystyrene sulfonate (Kayexalate) is a potassium binding resin that removes potassium from the body. It can be given orally or as an enema but may take several hours to work.

**94.** An eight-month-old child hospitalized for pyelonephritis has an oral temperature of 39 deg C. The child weighs 8 kg. The appropriate acetaminophen dosage to manage the fever is:

A) 40 mg.
B) 80 mg.
C) 120 mg.
D) 160 mg.
E) 200 mg.

**Correct Answer** **B**

**Explanation** The dose for acetaminophen is 10 mg/kg. Therefore the appropriate dose for this 8 kg child is 80 mg. The infant acetaminophen drops are supplied in 80 mg/0.8 ml, or one dropperful. For children age 4-11 months, the recommended dose is 0.8 ml. Overdosage of acetaminophen can cause life threatening hepatic toxicity. In children, an overdosage of less than 150 mg/kg has not been associated with hepatic toxicity.

**95.** An abdominal CT scan performed for microscopic hematuria in a mentally retarded 45- year- old man reveals a left renal mass with areas which have negative Hounsfield units. Further examination of the patient reveals multiple subcutaneous facial nodules. The most likely diagnosis is:

A) tuberous sclerosis.
B) von Hipple- Lindau disease.
C) von Recklinghausen's disease.
D) mutated p53 gene.
E) multiple endocrine neoplasia.

**Correct Answer** **A**

**Explanation** This patient has tuberous sclerosis which has a constellation of findings including mental retardation, renal angiomyolipomas, and facial adenoma sebaceum. The tip-off in this case is the negative Hounsfield units which indicate the presence of fat within the renal mass.

**96.** A phenotypically normal three-year-old girl has a bilateral inguinal exploration for hernia repair. A gonad is discovered during exploration and frozen section biopsy documents that it is a testis. These findings suggest:

A) persistent mullerian structures.
B) true hermaphroditism.
C) XY male with total androgen insensitivity.
D) XX/XO karyotype.
E) adrenogenital syndrome.

**Correct Answer** **C**

**Explanation** Testicular feminization or complete androgen insensitivity can be incidentally discovered when a testis is found while repairing an inguinal hernia in a phenotypic female. These patients are XY phenotypic females, lack internal mullerian structures, have blind ending vaginas, and show no stigma of masculinization or ambiguity of the genitalia. True hermaphroditism is extremely rare.

**97.** A 78-year-old man with significant coronary artery disease has a Stage T2b (B) transitional cell carcinoma of the bladder. Ten years ago he underwent abdominoperineal resection with sigmoid colostomy. IVP shows bilateral hydronephrosis. At the time of radical cystectomy, the urinary diversion of choice is:

A) sigmoid conduit.
B) transverse colon conduit.
C) ileal conduit.
D) transureteroureterostomy with cutaneous ureterostomy.
E) high jejunal conduit.

**Correct Answer** **A**

**Explanation** For this patient, the most rapid and risk-free method of diversion is desirable due to age and coronary artery disease. The creation of a sigmoid conduit using the preexisting stoma for the urinary diversion with a transverse colostomy requires only one bowel transection and no enteroenterostomy.

**98.** Which chemotherapeutic agent is safest to use in patients who have received extensive prior bone marrow radiation:

A) cyclophosphamide.
B) methotrexate.
C) vinblastine.
D) cisplatin.
E) adriamycin.

**Correct Answer** **D**

**Explanation** The primary toxicity of cis-platinum is renal and neural. It has minimal effect on the bone marrow. All of the other drugs listed have significant marrow toxicity.

**99.** Which medication improves urinary incontinence by enhancing bladder capacity and increasing bladder outlet resistance:

A) bethanechol.
B) ephedrine.
C) imipramine.
D) phenoxybenzamine.
E) propranolol.

**Correct Answer** **C**

**Explanation** Although the exact pharmacodynamics of imipramine (Tofranil) are not known, it is assumed that circulating catecholamine levels increase and stimulate the alpha-adrenergic receptors in the bladder neck and proximal urethra. Also, beta-receptors in the bladder body, which are involved in enhancing bladder capacity, are stimulated. Bethanechol is a cholinergic agent and is theoretically used to stimulate a detrusor contraction. Ephedrine enhances bladder neck resistance only, and phenoxybenzamine causes relaxation of smooth muscle of the bladder neck.

**100.** A 45-year-old woman has chronic indwelling ureteral stents for bilateral ureteral strictures from radiation therapy for cervical carcinoma. During stent exchange, brisk, bloody efflux occurs upon right ureteral stent removal. The best next step is:

A) replace the stent.
B) abdominal and pelvic arteriogram.
C) abdominal and pelvic CT scan.
D) placement of a balloon ureteral catheter.
E) ureteroscopy.

**Correct Answer** **B**

**Explanation** Ureteroarterial fistulas are rare with a reported mortality of nearly 40%. Risk factors associated with the development of ureteroarterial fistulas include pelvic surgery, pelvic malignancy, pelvic irradiation, pelvic vascular disease and chronic ureteral intubation. Diagnosis is difficult in the absence of active bleeding. Despite the hemorrhage that accompanies these lesions, standard arteriography is frequently falsely negative. Arteriography may establish the diagnosis and then the fistula can be occluded with common iliac artery embolization followed by arterial bypass grafting. Provocative arteriography has been reported by Vandersteen, et al. to demonstrate the fistula in 100% of cases. When clinical suspicion remains strong despite a negative arteriogram, exploratory laparotomy may be necessary to confirm the diagnosis and treat the condition.

**101.** At the time of a newborn circumcision, the distal one-half of the glans penis is amputated, including the urethra. The prepuce and glans have been kept in iced saline for four hours. The best management is:

A) primary anastomosis.
B) graft of preputial skin for coverage.
C) discard glans tip and allow secondary healing.
D) discard the glans tip and re- configure remaining glans.
E) primary anastomosis with microvascular reconstruction.

**Correct Answer** **A**

**Explanation** The length of time from injury and having had the tissue maintained in cold saline should permit adequate healing of the re-anastomosed tip. The urethra should be stented. The are no vessels of sufficient size to permit microvascular re-anastomosis.

**102.** A 68-year-old man undergoes a radical retropubic prostatectomy for Stage B-2 (T2b) cancer of the prostate. He is continent initially but six months later he develops incontinence. The most likely cause of his incontinence is:

A) flaccid bladder.
B) bladder neck contracture.
C) UTI.
D) uninhibited bladder contractions.
E) tumor infiltration of the sphincter.

**Correct Answer** **B**

**Explanation** A classic onset for bladder-neck contracture after radical prostatectomy is steadily gaining continence following by the seemingly sudden onset of incontinence which is overflow incontinence. Developing a flaccid bladder is improbable and a UTI does not cause incontinence. Uninhibited bladder contractions after radical prostatectomy do occur but rarely are they of late onset. It is unlikely that tumor would infiltrate the sphincter sufficient for incontinence at six months after surgery.

**103.** A 23-year-old man with elevated beta-hCG undergoes radical orchiectomy for a right testicular mass. Pathology reveals seminoma with five mitoses/hpf. Postoperative CT scan of the abdomen and chest and beta- hCG are normal. The best treatment is:

A) radiotherapy to the retroperitoneum.
B) retroperitoneal lymphadenectomy.
C) ifosfamide- based chemotherapy.
D) platinum- based chemotherapy.
E) surveillance.

**Correct Answer** **A**

**Explanation** This patient has an anaplastic seminoma. Although these tumors are typified by an increased mitotic activity, nuclear pleomorphism, and cellular anaplasia, analyses of treatment results indicate that inguinal orchiectomy plus radiation therapy is equally effective in controlling both anaplastic and classic seminoma.

**104.** A 24-year-old primigravida has her first prenatal examination at eight weeks of pregnancy. Although asymptomatic, she has greater than 10<sup>5</sup> E. Coli in her urine. The most appropriate management is:

A) antibiotic treatment only if symptomatic.
B) re-culture in one month.
C) antibiotics.
D) antibiotics and renal ultrasound.
E) delay antibiotics until third trimester.

**Correct Answer** **C**

**Explanation** Naeye's 1979 study of 58,518 single-born infants and eight placental/fetal disorders demonstrated a doubling in the incidence of the disorders for women whose pregnancy was characterized by pyuria and bacteriuria on one or more occasions. Increased fetal morbidity occurred when infection was present within two weeks of delivery, and a significant number will develop septic episodes during the third trimester. These observations confirm previous reports that maternal urinary tract infections are associated with increased perinatal problems. Positive urine cultures in pregnancy should be promptly treated regardless of symptoms if the specimen has been accurately collected and the culture correctly conducted.

**105.** The factor most responsible for ureteral dilation during pregnancy is:

A) mechanical compression by the uterus.
B) elevated estradiol levels.
C) elevated levels of the progestins.
D) hormones produced by the functioning placenta.
E) increased urine flow.

**Correct Answer** **A**

**Explanation** Dilation of the ureter occurs commonly during pregnancy and is most prominent by the 22nd to 24th week. Although various experiments have suggested that estrogens, progestins, and placental hormones may play a role in the dilation, mechanical compression is the most significant factor. Indeed, quadrupeds do not share in the incidence of the ureteral dilation during pregnancy that occurs in bipeds.

**106.** A 39-year-old woman has mild dysuria and frequency. Urinalysis shows 30 WBC/hpf and a few cocci. The midstream urine culture shows 10<sup>3</sup> coagulase negative staphylococci/ml. The best next step is:

A) pyridium.
B) repeat midstream culture.
C) urine culture for mycobacteria.
D) antibiotic therapy.
E) catheterized urine specimen for culture.

**Correct Answer** **D**

**Explanation** The standard definition of significant bacteriuria for a clean voided urine is >10^5 CFU/ml of uropathogen. This criterion has stood the test of time for screening and epidemiological studies and for entering patients in clinical trials. However there are several important exceptions to its rigid use in clinical practice and one is in patients with a pyuria/dysuria syndrome. In these patients, such a count is considered to represent significant bacteriuria. Certain bacterial species such as coagulase negative staphylocci also grow slowly in urina and may only reach counts of 10^3 CFU/ml.

**107.** A 45-year-old woman undergoes an abdominal CT scan because of vague abdominal pain and moderate hypertension. This demonstrates a 3.0 cm solid right adrenal mass. The next step is:

A) MRI scan with T1 weighted image.
B) right adrenalectomy.
C) needle biopsy of the mass.
D) iodocholesterol scan.
E) adrenal function studies.

**Correct Answer** **E**

**Explanation** Incidentally discovered adrenal masses represent a controversial area in management. Most agree that all lesions 6 cm or greater in diameter should be excised because of the risk of malignancy. With smaller lesions (<= 3 cm) the presence of steroid or catcholamine production constitutes the major indication for intervention.

**108.** Angiotensin II causes blood pressure elevation by its effect on:

A) peripheral vascular tone and cardiac rate.
B) peripheral vascular tone and blood volume.
C) blood volume and cardiac output.
D) blood volume and renin substrate.
E) the juxtaglomerular apparatus.

**Correct Answer** **B**

**Explanation** Renin is a proteolytic enzyme secreted in the juxtaglomerular apparatus of the kidney and is physiologically inert. Angiotensinogen is a plasma globulin substrate of hepatic origin, upon which renin acts to produce angiotensin I. Angiotensin I is a decapeptide which is also physiologically inert. Angiotensin I is acted upon by converting enzyme to produce the octapeptide angiotensin II. Angiotensin II is the first effector hormone of the renin system, and is the only substance directly responsible for elevation in blood pressure in patients with renovascular hypertension. It acts upon the smooth muscle of the peripheral vasculature to cause vasoconstriction, and also stimulates the zona glomerulosa to produce aldosterone which causes sodium retention in the distal tubule and thus produces volume expansion.

**109.** A three-year-old girl has Grade II/V right vesicoureteral reflux. She has been treated with prophylactic antibiotics for two years. The most compelling indication for operative repair is:

A) solitary kidney.
B) renal scarring.
C) intrarenal reflux.
D) paraureteral diverticulum.
E) recurrent pyelonephritis.

**Correct Answer** **E**

**Explanation** Recurrent breakthrough pyelonephritis is the most definite indication for surgical repair of reflux. The other indications are relative indications, dependent upon the clinical context and family. In all cases, the importance of bladder dysfunction as contributing to breakthrough infections must be considered and managed, even if surgical repair is chosen.

**110.** A 58-year-old man has a fungating carcinoma involving the glans and shaft of the penis associated with palpable nodes in the right inguinal region. The most appropriate management is penectomy and:

A) right groin dissection in six weeks.
B) antibiotics and re-examine groin in six weeks.
C) radiation therapy to the right groin.
D) bilateral groin dissection in six weeks.
E) immediate bilateral groin dissection.

**Correct Answer** **B**

**Explanation** Because lymph node enlargement and lymphangitis due to infection of the primary tumor are common at the time of diagnosis, all patients with penile cancer should receive four to six weeks of antibiotic therapy before undergoing lymphadenectomy. At the completion of this course of treatment, the groins are carefully examined for the presence of abnormal nodes. Thirty to 60% of patients who present with penile cancer have palpable inguinal nodes, and following antibiotic therapy, half of these nodes will harbor metastases.

**111.** A 25-year-old man complains of inadequate penile erections since sustaining a pelvic fracture in a motor vehicle accident two years ago. After a successful urethral stricture repair, he denies any difficulty with orgasm and ejaculation. Intracavernosal injection of 15 ug of prostaglandin E<sub>1</sub> produces a soft erection. The next step in evaluation should be:

A) infusion cavernosography.
B) pelvic/pudendal arteriography.
C) infusion cavernosometry.
D) intracavernosal injection of 30 ug of prostaglandin E<sub>1</sub>.
E) color Doppler study of penile arteries.

**Correct Answer** **E**

**Explanation** This young patient most likely has either an arterial or a neurologic injury to explain his erectile difficulty. A neurologic lesion is less likely because of his failure to respond with an erection to a reasonable dose of prostaglandin E1. Patients with neurogenic injuries frequently respond to very low doses of intracavernosal agents. The major clinical question which needs to be answered is whether or not this patient has an arterial injury. Infusion cavernosography and infusion cavernosometry are studies which demonstrate the extent and site of corporovenous leakage. Fifteen ug of prostaglandin E1 is a reasonable dose of drug to administer and increasing the dose to 30 ug would likely not produce more information. The study of choice to determine the presence of arterial disease in this clinical situation is a color Doppler study of the penile arteries before and after the intracavernosal injection of vasoactive drugs. Only after arterial disease has been diagnosed and only when operative revascularization is under consideration should pelvic/pudendal arteriography be performed.

**112.** A 56-year-old dialysis patient is treated for a UTI. Which drug would require a dosage adjustment due to renal failure:

A) erythromycin.
B) chloramphenicol.
C) doxycycline.
D) isoniazid.
E) tetracycline.

**Correct Answer** **E**

**Explanation** Of the drugs listed only tetracycline is markedly retained in the presence of renal failure. Isoniazid, doxycycline, chloramphenicol, and erythromycin are retained little or not at all, and have extra renal metabolic pathways.

**113.** A 27-year-old man has a right testicular mass. An inguinal orchiectomy is performed and histology shows pure seminoma. CT scan is normal but serum beta- hCG is 60 iu/ml (normal less than 7 iu/ml) six weeks later. The best treatment is:

A) radiation to retroperitoneal nodes.
B) radiation to retroperitoneal and mediastinal nodes.
C) retroperitoneal lymphadenectomy.
D) platinum- based chemotherapy.
E) check serum LH levels.

**Correct Answer** **A**

**Explanation** This patient most likely has persistent seminoma in the retroperitoneum. Patients who harbor non-seminomatous elements that could have been 'burnt-out' in the primary tumor usually have hCG levels higher than 200 ng/ml. Most authorities recommend treating seminoma with radiation to the retroperitoneal lymph nodes only, thus avoiding the potential toxicity of mediastinal disease which, if it develops later, may be salvaged with chemotherapy. Few authorities would recommend primary retroperitoneal lymphadenectomy for seminomas. Patients with markedly elevated serum LH levels may have a false elevation of hCG but it is usually not to the magnitude described here.

**114.** Six hours after a radical cystoprostatectomy and ileal conduit diversion, a 71-year-old man becomes severely oliguric. Blood pressure is 110/70 mm Hg (supine), CVP is 2 cm H<sub>2</sub>O, pulse is 110/min. The drains have an hourly output of 50 cc/hr of serosanguinous fluid. Bolus doses of furosemide minimally alter the urinary output. The stents irrigate freely. The next step should be:

A) loopogram.

B) surgical exploration.

C) IVP.

D) 500 ml D5 Ringer's lactate bolus intravenously.

E) place a sump drain in the conduit.

**Correct Answer** **D**

**Explanation** This patient is undergoing extreme fluid shifts after his cystoprostatectomy. The combination of anuria and freely-irrigating stents suggests that he may be shifting large amounts of fluid into the 'third space' and may be fluid depleted, though compensating fairly well as suggested by his vital signs. A fluid challenge is clearly indicated even prior to furosemide injection.

**115.** A 58-year-old woman undergoes transurethral resection of a recurrent Grade II, Stage O (Ta) superficial bladder tumor located directly over the right ureteral orifice. Postoperatively, she receives six weekly intravesical BCG treatments. Three months later, an IVP reveals right hydroureteronephrosis. Urine cytology and cystoscopy are normal. The most likely explanation for the urographic findings is:

A) invasive ureteral tumor.
B) invasive bladder tumor.
C) fibrosis from transurethral resection.
D) ureteral edema due to BCG.
E) ureteral granuloma due to BCG.

**Correct Answer** **C**

**Explanation** Ureterovesical junction obstruction secondary to fibrosis following transurethral resection directly over the ureteral orifice is a well-recognized complication. Ureteral obstruction due to distal ureteral or bladder tumor generally implies invasive disease. However, invasive disease this soon is unlikely in the described patient. Intravesical BCG therapy caused ureteral obstruction in only 0.3% of patients and is a less likely answer than c.

**116.** The factor which predisposes to late failure after endopyelotomy performed at the time of percutaneous nephrostolithotomy is:

A) intrarenal pelvis.
B) crossing renal vessels.
C) prior open pyeloplasty.
D) duplicated collecting system.
E) renal pelvic calculus > 3 cm.

**Correct Answer** **B**

**Explanation** Endopyelotomy is an effective method for the management of ureteropelvic junction obstruction with success rates of a 75-80% in long term studies. In those patients who have concomitant stone disease and UPJ obstruction, a percutaneous approach allows access to both the stones and UPJ during one procedure. Factors predictive of a poor response to endopyelotomy include crossing vessels seen on pre-operative arteriogram or spiral CT scan as well as high-grade hydronephrosis. Long term success rates when both factors are present is only 40%. Yet, if neither significant hydronephrosis nor crossing vessels is present, success rates upwards of 95% have been reported.

**117.** A 56-year-old man with a normal digital rectal examination and a PSA of 6.2 ng/ml undergoes digitally-directed prostate biopsy. Pathology reveals Gleason score 3+3 adenocarcinoma in 1/6 cores. Prior to definitive therapy he should undergo:

A) no additional studies.
B) transrectal ultrasound.
C) bone scan.
D) biopsy of seminal vesicles.
E) pelvic CT scan.

**Correct Answer** **A**

**Explanation** This patient needs no further staging studies. The likelihood of a positive bone scan is under 0.5%, biopsy of seminal vesicles is poorly predictive (and in this case, there is a very low likelihood of seminal vesicle invasion), and pelvic CT scan has a low positive predictive value. Additionally, a recent randomized clinical trial demonstrated transrectal ultrasound to be no better in the local staging of prostate cancer than digital rectal examination. In this patient, therefore, additional staging studies would do little more than add to the final cost of treatment.

**118.** A 50-year-old man has fatigue and hypertension. Serum potassium is 3.0 mEq/dl. CT scan of the abdomen demonstrates a 1.5 cm mass in the right adrenal. The most likely laboratory finding is:

A) serum sodium = 125 mEq/l.
B) elevated urinary VMA.
C) serum bicarbonate = 10 mEq/l.
D) elevated plasma catecholamines.
E) elevated urine aldosterone.

**Correct Answer** **E**

**Explanation** Hypokalemia and hypertension should immediately suggest primary aldosteronism. The differential of an adrenal mass and hypertension includes adrenal hyperplasia, adrenal carcinoma, aldosteroma, and pheochromocytoma. The size of the mass and hypokalemia strongly suggests primary aldosteronism. Laboratory values associated with this diagnosis include elevations in serum sodium, bicarbonate, and aldosterone. Inability to suppress plasma and urine aldosterone with desoxycorticosterone after sodium loading differentiates primary from secondary aldosteronism.

**119.** A 4 cm mass is found in the right kidney of an asymptomatic 58-year-old man. The mass is irregular in shape with imperceptible walls, no internal echo pattern, and appears cystic (Hounsfield number 10) on a non- contrast CT scan. With contrast injection, enhancement of the mass is seen (Hounsfield number 30). The left kidney is normal. The next best step is:

A) surgical excision.
B) percutaneous aspiration.
C) renal scan.
D) renal arteriogram.
E) observation alone.

**Correct Answer** **A**

**Explanation** To achieve a high degree of accuracy in identifying simple cysts, all of the following criteria must be met: 1) uniform water density with coefficients of attenuation no greater than 15 to 20 HU; 2) rounded or oval, sharply marginated mass without a perceptible wall; 3) absence of contrast enhancement. If these criteria are not met, the mass must be considered solid or indeterminate since necrotic or low-density solid masses can appear very much like a cyst. None of the diagnostic studies mentioned would satisfactorily exclude renal cell carcinoma and surgical exploration is indicated.

**120.** A seven-year-old neurologically normal boy with recurrent UTI's and incontinence has a normal IVP and VCUG. Urodynamic evaluation reveals detrusor instability and increased sphincter activity during voiding. The best initial treatment is:

A) oxybutynin.
B) pseudoephedrine.
C) diazepam.
D) imipramine.
E) prazosin.

**Correct Answer** **A**

**Explanation** Poor cerebral appreciation of sudden detrusor contractions is common in such patients. Voluntary sphincter contraction is thought to be a response to sudden detrusor contraction, and elimination of the latter can improve the coordination necessary for efficient voiding.

**121.** A 30-year-old woman sustains a complete transection of the left ureter at the level of L-5 during removal of a large ovarian cyst. Preoperative IVP was within normal limits. The most appropriate treatment is:

A) transureteroureterostomy.
B) ureteroureterostomy.
C) nephrostomy and delayed ureteral repair.
D) psoas hitch and ureteroneocystostomy.
E) Boari flap and ureteroneocystostomy.

**Correct Answer** **B**

**Explanation** Simple transection of the ureter at the L5 level can be easily managed by ipsilateral ureteroureterostomy spatulating each end of the ureter and performing an elliptical anastomosis over a stenting catheter. More sophisticated operative techniques would be unnecessary, and could potentially damage other structures.

**122.** In a 72-year-old man with prostatic carcinoma metastatic to the skeleton, increased bone pain that occurs with initiation of leuprolide acetate treatment can be reduced by administration of:

A) bicalutamide (Casodex).
B) megestrol acetate (Megace).
C) diethylstilbestrol (DES).
D) estramustine phosphate (Emcyt).
E) strontium- 89 (Metastron).

**Correct Answer** **A**

**Explanation** It is now clear that an LH-RH agonist, when administered alone, can result in a flair phenomenon initially. The most effective agents for preventing this activity are antiandrogens, such as flutamide and bicalutamide. Both are nonsteroidal antiandrogens that are competitive inhibitors of the androgen receptor. As a result, they prevent testosterone and dihydrotestosterone from binding to the androgen receptor. Megestrol acetate, cyproterone acetate, Emcyt, and dexamethasone have not been shown to block the flair phenomenon associated with LH-RH agonist therapy.

**123.** A 21-year-old man has recurrent severe left ureteropelvic obstruction six months after pyeloplasty. Retrograde pyelogram shows a 4 cm long stricture of the upper ureter, a small renal pelvis, and severe calyectasis. Isotope renogram shows that left renal function is 35% of the total. The right kidney is normal, and there is no urinary infection. The preferred treatment is:

A) ureterocalicostomy.
B) revision of pyeloplasty.
C) Davis intubated ureterotomy.
D) ileal ureter.
E) endopyelotomy.

**Correct Answer** **A**

**Explanation** Ureterocalicostomy after lower pole resection should give the best result. Revision is fraught with problems in this case; dissection of these friable structures is unlikely to give well-defined margins for anastomosis. Ureterolysis will not resolve the intrinsic ureteral obstruction. The ileal ureter would be different to anastomose to the pelvis and is unnecessary unless insufficient ureter remains. Transplant of the kidney to the true pelvis adds unnecessary risks.

**124.** An 11-year-old boy with spina bifida is scheduled for bladder augmentation and implantation of an artificial urinary sphincter. Infection or erosion are more common if sphincter implantation is performed:

A) prior to bladder augmentation.
B) following bladder augmentation.
C) simultaneous with augmentation.
D) with sigmoid enterocystoplasty.
E) in an area of previous surgery.

**Correct Answer** **E**

**Explanation** The best treatment for a patient with low bladder compliance, small capacity, and sphincteric incontinence is the combined use of bladder augmentation and increased bladder outlet resistance. When an artificial urinary sphincter is used in conjunction with augmentation of the bladder, the timing of the two procedures does not appear to affect the outcome. More important factors are good bowel preparation, intravenous antibiotics, sterility of the urine, and meticulous surgical technique to avoid entering the previously augmented bladder during sphincter implantation which may predispose to infection and sphincter erosion. Patients who have undergone prior incontinence procedures are also at increased risk for sphincter erosion.

**125.** A 35-year-old man undergoes a ureterolithotomy after failed endoscopic manipulation of a lower ureteral calculus. Six months postoperatively, an IVP shows moderate hydronephrosis down to the operative site. The patient is asymptomatic. The best next step is:

A) ileal ureter.
B) ureteroureterostomy.
C) antegrade nephrostomy and ureteral dilation.
D) psoas hitch ureteral reimplant.
E) balloon dilation with stent placement.

**Correct Answer** **E**

**Explanation** In a recent report, 20% of patients with ureteral strictures were asymptomatic when they developed upper urinary tract obstruction. Patients post-ureterolithotomy appeared to be in the most favorable group for endoscopic manipulation and stenting. Short strictures appear to be more amenable to balloon dilation and stenting. Open surgery thus may be avoided. It would seem appropriate to try an endoscopic procedure before immediate surgery particularly in the immediate postoperative period. Antegrade manipulation is not necessary if access can be obtained via the bladder (usually associated with less morbidity and patient discomfort). After dilation, stenting of the ureter is important.

**126.** The most common finding in diabetic voiding dysfunction is:

A) increased bladder capacity.
B) decreased bladder sensation.
C) impaired detrusor contractility.
D) high bladder compliance.
E) decreased uroflow.

**Correct Answer** **B**

**Explanation** Diabetic cystopathy is characterized by the insidious onset of impaired bladder sensation which progresses to infrequent voiding and increasing of bladder capacity. Overstretching of the bladder eventually leads to impaired detrusor contractility and decreased uroflow.

**127.** The normal epithelium of the distal bulbar urethra in the adult male is:

A) transitional.
B) stratified squamous.
C) pseudostratified columnar.
D) columnar.
E) keratinized stratified squamous.

**Correct Answer** **C**

**Explanation** Pseudostratified columnar epithelium lines the urethra from the membranous area to the fossa navicularis where stratified squamous epithelium becomes predominant. Transitional cell epithelium lines the prostatic urethra to the membranous area. Neither columnar nor keratinized squamous epithelium is normally present in the male urethra.

**128.** The most likely side effect of thiazide diuretic therapy for renal hypercalciuria is:

A) hypotension.
B) hyperkalemia.
C) hypocitraturia.
D) skin rash.
E) hyperoxaluria.

**Correct Answer** **C**

**Explanation** Thiazides are considered selective medical therapy for patients with renal hypercalciuria. However, thiazide use can be associated with hypokalemia, subsequent intracellular acidosis and significant hypocitraturia. Thiazide-induced hypocitraturia is the most common complication associated with thiazide therapy of hypercalciuria. Thiazides may also cause hyperuricosuria which can also exacerbate calcium stone formation.

**129.** A C-6 quadriplegic is evaluated for recurrent UTI with cystoscopy. This reveals a trabeculated bladder, dilated prostatic urethra, and a 2 cm vesical calculus. During the examination, the patient develops diaphoresis, headache, and a blood pressure of 210/160 mm/Hg. Immediate therapy should be:

A) intravenous nitroprusside.
B) empty the bladder and remove the cystoscope.
C) blood cultures and intravenous tobramycin.
D) intravenous antibiotics and remove vesical calculus.
E) intravenous antibiotics and steroids.

**Correct Answer** **B**

**Explanation** Autonomic dysreflexia is very common in spinal cord injury patients with lesions at T -10 or above. A stimulus, most frequently bladder irritation or overdistention, will precipitate a reflux sympathetic response manifested by extreme hypertension. The first order of treatment is to eliminate the stimulus, in this case empty the bladder and remove the cystoscope.

**130.** A 46-year-old man who received a right kidney transplant two years ago has the gradual onset of right hip pain and progressive difficulty in walking. His deep tendon reflexes are symmetrically normal. He is taking cyclosporine, azathioprine, and prednisone. His urinalysis shows 1+ proteinuria and 4-5 RBC/hpf. His serum creatinine is 2.5 mg/dl. The most likely cause of this man's pain is:

A) femoral nerve palsy secondary to chronic rejection.
B) Guillain-Barre syndrome.
C) osteomyelitis.
D) aseptic necrosis of femoral head.
E) Imuran-induced neuropathy.

**Correct Answer** **D**

**Explanation** Aseptic necrosis of the femoral head occurs in 12% of renal transplant patients. It is believed to be due to steroid administration, although hypercalcemia may play a role. This occurs regardless of age, sex, duration of dialysis, or type of donor. The disorder usually does not occur within the first six to nine months following the transplant. Aseptic necrosis has also been reported after steroid treatment for immunologic infertility. Guillain-Barre syndrome usually presents with a peripheral neuropathy. Femoral nerve palsy may occur after renal transplant but its onset is immediately after the transplant. Imuran does not induce a neuropathy.

**131.** The colorimetric dipsticks employed for screening proteinuria react preferentially with:

A) albumin.
B) immunoglobin.
C) Tamm-Horsfall protein.
D) serum globulins.
E) Bence Jones protein.

**Correct Answer** **A**

**Explanation** A colorimetric dipstick is impregnated with tetrabromphenol blue which reacts preferentially with serum albumin and changes color in its presence. It is relatively insensitive to immunoglobin, Tamm-Horsfall protein, serum globulin, and Bence Jones protein.

**132.** Serum osmolality is determined by utilizing a formula which involves the sum of which three osmotically active substances in the blood:

A) sodium, potassium, glucose.
B) sodium, chloride, urea nitrogen.
C) sodium, glucose, urea nitrogen.
D) albumin, glucose, creatinine.
E) albumin, globulin, urea nitrogen.

**Correct Answer** **C**

**Explanation** Osmolality is estimated by computing the sum of serum sodium (mEq/l) x 2, glucose (mg/dl)/18 and urea (mg/dl)/3. Creatinine and potassium contribute less to the osmolality of serum. The chloride contribution is taken into account by doubling the sodium concentration.

**133.** Three months following right percutaneous renal biopsy, a 32-year-old dialysis patient has persistent gross hematuria and a hematocrit of 24%. Renal ultrasound shows multiple bilateral simple cysts. Cystoscopy localizes bleeding to the right kidney. The best next step is:

A) transfusion and continued observation.
B) epsilon aminocaproic acid (Amicar).
C) CT scan.
D) renal angiography.
E) simple nephrectomy.

**Correct Answer** **D**

**Explanation** Percutaneous renal biopsy is the most common cause of acquired arterio-venous fistulas. Most such fistulas are asymptomatic and 72% will close spontaneously. However, persistent gross hematuria as described in this case deserves further investigation and treatment. In such cases, angiography should be performed. When a small peripheral arterio-venous fistula is identified management is selective transcatheter embolization. Open operative intervention should be reserved for failures or contraindications to transcatheter embolization.

**134.** In a duplicated urinary system, obstructive hydronephrosis in the lower pole system is usually due to:

A) orthotopic ureterocele.
B) ectopic ureter.
C) ureteropelvic junction obstruction.
D) ectopic ureterocele.
E) ureterovesical junction obstruction.

**Correct Answer** **C**

**Explanation** Unlike obstruction at the ureterovesical junction or that caused by ureterocele or ectopic ureter, UPJ obstruction usually affects the lower renal moiety in both complete and incomplete renal duplications.

**135.** A 50-year-old man who takes probenecid for gouty arthritis has a 1.5 cm diameter radiolucent stone in his left renal pelvis. The patient is asymptomatic, has sterile urine, and has satisfactory renal function without significant obstruction. In addition to discontinuing probenecid, he should be treated with:

A) ESWL.
B) percutaneous nephrolithotomy.
C) administration of allopurinol.
D) oral bicarbonate and hydration therapy.
E) percutaneous nephrostomy and bicarbonate solution irrigation.

**Correct Answer** **D**

**Explanation** The invasive techniques outlined above are applicable to individuals with symptomatic uric acid calculi or to those who fail medical management. Discontinuing probenecid, a uricosuric, will reduce uric acid excretion. Oral bicarbonate and hydration with periodic monitoring is usually sufficient to dissolve uric acid stones. If significant uricosuria is present or serum uric acid levels are elevated, allopurinol should be added. Allopurinol alone will not dissolve uric acid calculi.

**136.** A 42-year-old man has severe right flank pain and microscopic hematuria. IVP demonstrates a 5 mm distal ureteral calculus and significant forniceal extravasation. Following pain control, the next step is:

A) ESWL.
B) ureteral stent.
C) ureteroscopy.
D) observation.
E) percutaneous nephrostomy.

**Correct Answer** **D**

**Explanation** Forniceal extravasation, noted during IVP, often occurs in the presence of a small, obstructing ureteral calculus. Urine extravasates from a ruptured caliceal fornix into the renal sinus where it is absorbed by lymphatics. Usually, intervention is not necessary except where the urine is infected, the obstruction complete or if the pain is uncontrollable. Moreover, if the calculus is large and not likely to pass, intervention may also be necessary. In this case, the patient has an excellent chance that the stone may pass spontaneously and, therefore, observation is warranted, at least initially.

**137.** The medication most likely to exacerbate struvite stone formation is:

A) thiazide.
B) magnesium oxide.
C) potassium citrate.
D) acetohydroxamic acid.
E) orthophosphate.

**Correct Answer** **E**

**Explanation** 'Struvite' stones, 'infection-induced' stones, 'urease' stones and 'triple-phosphate' stones are all synonymous terms that refer to either magnesium ammonium phosphate or carbonate apatite calculi. Since phosphate is a major component of these two salts, phosphate therapy is contraindicated in cases of infection calculi since this medication may promote further stone formation.

**138.** A 58-year-old woman has painless hematuria. An IVP is normal. Cystoscopy reveals a 2 cm tumor in the bladder which is completely resected transurethrally. Histologic diagnosis is nephrogenic adenoma. The preferred management is:

A) surveillance cystoscopy.
B) intravesical BCG.
C) serial urinary cytologies.
D) intravesical mitomycin-C.
E) partial cystectomy.

**Correct Answer** **A**

**Explanation** Nephrogenic adenoma is a benign entity which can occur at virtually any age in almost any location on the urothelium, from renal pelvis to bladder. It follows a benign course and, while recurrences have occasionally been reported (perhaps due to incomplete resection), progression and metastasis have not been noted.

**139.** Twenty- four hours after relief of bilateral ureteral obstruction, a patient continues to produce in excess of 400 ml of urine per hour. The blood pressure shows orthostatic changes and the patient is tachycardic. Serum chemistries reveal the following: BUN = 31 mg/dl, creatinine = 1.6 mg/dl, Na = 129 mEq/l, K = 4.9 mEq/l, and total CO<sub>2</sub> = 19 mEq/l. The most likely explanation for this syndrome is:

A) salt- wasting nephropathy and/or collecting duct insensitivity to vasopressin.
B) glomerular damage from high renal pelvic pressures.
C) aldosterone- resistant volume depletion.
D) acute adrenal insufficiency.
E) physiologic diuresis.

**Correct Answer** **A**

**Explanation** Orthostatic vital sign changes and tachycardia suggest that this patient is becoming hypovolemic. The persistent high urinary output implies the presence of a pathologic post-obstructive diuresis. This has been attributed to a salt-wasting nephropathy and/or collecting duct insensitivity to vasopressin. Pathologic post-obstructive diuresis generally occurs in patients who have good glomerular function, but poor tubular function.

**140.** A 24-year-old woman with recurrent cystitis develops vaginal yeast infections during antibiotic therapy. The best treatment for the patient's next UTI is:

A) trimethoprim.
B) tetracycline.
C) nitrofurantoin.
D) ciprofloxacin.
E) cephalexin.

**Correct Answer** **C**

**Explanation** Nitrofurantoin is absorbed quickly from the upper gut and secreted in high concentrations in the urine. It does not achieve significant tissue concentrations and is not excreted in the vaginal mucin. Nitrofurantoin therefore has a lower incidence of yeast overgrowth of the vagina during treatment of cystitis.

**141.** A 60-year-old man with squamous cell carcinoma of the penis invading the right corpus cavernosum undergoes partial penectomy. After six weeks of cephalexin therapy, a 3.5 cm right inguinal lymph node has decreased in size to 2.0 cm. Pelvic CT scan is normal. The next step is:

A) reevaluation in three months.
B) needle aspiration of the suspicious node.
C) sentinel node biopsy.
D) bilateral inguinal node dissection.
E) right inguinal node dissection.

**Correct Answer** **D**

**Explanation** The patient has a Stage II penile cancer with invasion of the corpora which is associated with a much higher incidence of positive lymph nodes. Although the lymph node has decreased in size, it is still palpable after six weeks and deserves excision. Since this patient is at high risk for nodal disease, neither a negative needle aspiration nor a negative sentinel node biopsy should dissuade one from lymphadenectomy.

**142.** A 16-year-old uncircumcised boy is shot in the penis with a low velocity bullet from a .22 caliber handgun. He has voided a small amount of grossly bloody urine and is now in urinary retention. A urethrogram shows disruption of 1 cm of the penile urethra with extravasation of contrast material. The best next step is debridement of the wound and:

A) suprapubic tube.
B) patch graft urethroplasty.
C) urethral catheter.
D) island flap urethroplasty.
E) end to end reanastomosis.

**Correct Answer** **E**

**Explanation** Injuries to the anterior urethra are best managed with primary repair. The penile skin is degloved and the extent of the injury is determined. Primary anastomosis can be accomplished with short defects and low-velocity injuries. Flap and graft urethroplasties are not the best choice for repair due to an increased risk for infection. Urinary diversion will generally result in urethral stricture and/or fistula requiring secondary repair.

**143.** A healthy five-year-old boy is evaluated for bloody urethral discharge. VCUG demonstrates a diverticulum of the bulbous urethra. The most likely explanation for the radiographic finding is:

A) utricle.
B) straddle injury.
C) meatal stenosis.
D) urethral duplication.
E) Cowper's gland duct cyst.

**Correct Answer** **E**

**Explanation** A diverticulum of the bulbous urethra in a young male is most commonly related to dilation of a Cowper's gland duct. These cysts have been found in 2.3% of autopsied males; however, they are rarely diagnosed clinically. Straddle injury usually is associated with stricture formation. Urethral duplication, although a possibility here, is much less common and often associated with infection. A utricle would enter the prostatic urethra.

**144.** The efficacy of amphotericin B bladder irrigations for localized Candidal infection is reduced by:

A) an alkaline urine.
B) concomitant use of sulfonamide therapy.
C) an acid urine.
D) use of non-siliconized catheters for drainage.
E) presence of bacterial infection in the urine.

**Correct Answer** **C**

**Explanation** The ideal pH for growth of Candida fungi ranges from 5.1 to 6.4. Alkalinization of the urine may help resolve candiduria.

**145.** A 14-year-old boy has a straddle injury to the perineum. Physical examination reveals ecchymosis limited to the penis and scrotum. The fascia that contains the extravasated blood is:

A) Buck's.
B) dartos.
C) Colles'.
D) external spermatic.
E) transversalis.

**Correct Answer** **C**

**Explanation** The corporal bodies are surrounded by tunica albuginea. Buck's fascia surrounds the corpora cavernosa and corpus spongiosum. If the injury to the urethra is contained within Buck's fascia the hematoma will remain confined to the shaft of the penis. Rupture through Buck's fascia leads to extension of the hematoma into the scrotum. The classic presentation of a urethral injury contained within Colles' fascia is that of a butterfly hematoma of the perineum. Superiorly the extravasation can extend to the clavicles where Scarpa's fascia, the abdominal extension of Colles' fascia, attaches.

**146.** The serum beta subunit of human chorionic gonadotropin (beta-hCG) may be falsely elevated by cross-reactivity with:

A) inhibin.
B) alpha-fetoprotein (AFP).
C) luteinizing hormone (LH).
D) follicle-stimulating hormone (FSH).
E) gonadotropin releasing hormone (GnRH).

**Correct Answer** **C**

**Explanation** Luteinizing hormone and human chorionic gonadotropin have extensive structural homology. Both share a common alpha-subunit and the beta-subunits are 80% homologous. A number of commercially available RIA kits for beta-hCG will cross react with elevated levels of LH. Elevated LH concentrations may result after orchiectomy if there is inadequate testosterone production from the contralateral testis, thereby producing a spuriously positive elevation of the hCG.

**147.** The drug most likely to cause a clinically significant decrease in bladder contractility is:

A) phenoxybenzamine.
B) phenylephrine.
C) amitriptyline.
D) pseudoephedrine.
E) terazosin.

**Correct Answer** **C**

**Explanation** Amitriptyline, a tricyclic antidepressant, has significant anticholinergic properties which may result in urinary retention. Phenoxybenzamine and terazosin are alpha-adrenergic blocking agents, phenylephrine an alpha-adrenergic agonist, and pseudoephedrine possesses both alpha- and beta-adrenergic properties. None of these drugs acting on the sympathetic nervous system are likely to cause a clinically significant decrease in bladder contractility.

**148.** A 56-year-old man has a well-functioning cadaveric renal transplant. He is an insulin-dependent diabetic and develops chronic symptomatic urinary retention. Bladder emptying does not improve with alpha-adrenergic blockade or TURP. The most appropriate management is:

A) sterile intermittent catheterization.
B) clean intermittent catheterization.
C) prostatic stent.
D) repeat TURP.
E) bethanechol.

**Correct Answer** **B**

**Explanation** Clean intermittent catheterization is the treatment of choice for chronic nonobstructive urinary retention. The risks and complications of this management are not significantly greater in transplant recipients than in patients with normally functioning kidneys.

**149.** A couple undergoing evaluation for primary infertility has an abnormal postcoital test. This is most likely due to:

A) improper timing.
B) male partner antisperm antibodies.
C) female partner antisperm antibodies.
D) cervicitis.
E) abnormal semen.

**Correct Answer** **A**

**Explanation** An abnormal postcoital test may be due to either cervical factors such as prior surgery or infection, seminal factors, or immune problems. However, the most common cause of an abnormal result is improper timing to the wife's ovulatory cycle. Cervical mucus composition changes during the cycle and is only favorable to sperm transport during the periovulatory period.

**150.** Eighteen weeks after a difficult radical prostatectomy, a patient complains of fever and tenderness over the pubic symphysis. The symptoms have lasted for three weeks. The next diagnostic test should be:

A) suprapubic needle aspiration for culture and cytology.
B) cystogram.
C) x-ray of the pubis.
D) MRI scan of the pelvis.
E) serum PSA.

**Correct Answer** **C**

**Explanation** Osteitis pubis is an inflammation of the symphysis pubis that is probably initiated by periosteal injury. It has been described after pelvic surgery (retropubic, perineal, and transurethral prostatectomy) and various gynecological operations, infection (prostatic abscess), pelvic irradiation, vascular and athletic trauma, and cryosurgery of the prostate. Symptoms usually occur 8-12 weeks postoperatively. Supportive therapy in the form of analgesics and antiinflammatory agents is required. The disease is self-limited.

**151.** The therapy most likely to cause painful gynecomastia in men with normal serum testosterone is:

A) megestrol acetate.
B) leuprolide and flutamide.
C) ketoconazole.
D) bicalutamide.
E) finasteride.

**Correct Answer** **D**

**Explanation** Breast tenderness and enlargement during hormonal therapy for prostate cancer are due to elevated serum estrogens. Leuprolide inhibits pituitary LH release so there is no rise in serum testosterone or estrogens. Antiandrogens (such as flutamide and bicalutamide) used as monotherapy cause a rise in plasma estradiol levels leading to gynecomastia in about 40% of patients. Finasteride and ketoconazole are infrequently (< 5%) associated with gynecomastia.

**152.** Bilateral orchiectomy most consistently alters:

A) libido.
B) orgasm.
C) ejaculation.
D) erection.
E) serum prolactin level.

**Correct Answer** **A**

**Explanation** Serum testosterone concentration is most related to sexual interest or libido rather than to erection, emission, or ejaculation. A surprising number of individuals who have had a bilateral orchiectomy retain the ability to have erection. Serum prolactin levels are sometimes inversely related to serum testosterone (as in hyperprolactinemic states), but otherwise there is no consistent relationship. Bilateral orchiectomy does not cause any reproducible change in the serum prolactin level.

**153.** The irrigating solution which should be used for percutaneous nephroscopy and ureteroscopy is:

A) 1.5% glycine.
B) sterile water.
C) 3% glycine.
D) 0.9% sodium chloride.
E) 0.15% sodium chloride.

**Correct Answer** **D**

**Explanation** Intravascular fluid absorption can occur with ureteroscopy and percutaneous nephroscopy. This may be massive during percutaneous nephrostolithotomy if a closed irrigation and drainage system is used. Normal saline is both isotonic and non-conductive whereas the other listed fluids do not share both of these properties. There is no advantage to using a solution other than normal saline during these procedures unless intrarenal electrosurgery is being performed. Only in this situation is it necessary to change to using glycine or sorbitol as the irrigant.

**154.** A 55-year-old man undergoes a left lower pole partial nephrectomy for a 3.5 cm solid renal mass. The contralateral kidney is normal. Two days postoperatively, his serum hematocrit drops from 32% to 18% over 24 hours. The urine is dark burgundy in color. He is afebrile and vital signs are stable. The next best step is:

A) angiography and embolization of bleeding vessels.
B) reoperation with suture ligation of bleeding vessels.
C) reoperation with nephrectomy.
D) bedrest, serial monitoring, and needed transfusions.
E) cystoscopy with ureteral stent placement.

**Correct Answer** **D**

**Explanation** Complications of partial nephrectomy include hemorrhage, urinary fistula formation, ureteral obstruction, renal insufficiency, and infection. Significant intraoperative bleeding can occur in patients who are undergoing partial nephrectomy. The need for early control and ready access to the renal artery is emphasized. Postoperative hemorrhage may be self-limiting if confined to the retroperitoneum, or it may be associated with gross hematuria. The initial management of postoperative hemorrhage is expectant with bedrest, serial hemoglobin and hematocrit determinations, frequent monitoring of vital signs, and blood transfusions as needed. Angiography may be helpful in some patients to localize actively bleeding segmental arteries, which may be controlled by angioinfarction. Severe intractable hemorrhage may necessitate re-exploration with early control of the renal vessels and ligation of the active bleeding points.

**155.** A six-year-old girl with a failed dismembered pyeloplasty for ureteropelvic junction obstruction has been left with almost no extrarenal pelvis. In salvaging the kidney by ureterocalycostomy, the most important technical point is:

A) closure of renal parenchyma around ureter.
B) omental wrap of ureter.
C) downward renal mobilization.
D) wide ureteral mobilization.
E) amputation of lower renal pole.

**Correct Answer** **E**

**Explanation** In order to avoid obstruction of the ureter by circumferential cortical fibrosis, an adequate amputation of the lower pole to provide access to the lower pole calyx is important. Preservation of the renal capsule to cover the parenchyma helps with hemostasis. A widely-spatulated, precise ureterocalycostomy will then usually be successful.

**156.** A nine-year-old girl is struck in the abdomen and right flank by an automobile. She is alert and her vital signs are stable. She has moderate guarding in her right upper quadrant and decreased bowel sounds. Her hematocrit is 33%, and she has blood-tinged urine. A CT scan demonstrates a 4 cm hepatic laceration and hematoma and a 3 cm laceration of the right kidney with minimal contrast extravasation. The next step in management is:

A) observation.
B) peritoneal lavage.
C) renal and hepatic arteriography.
D) percutaneous drain placement.
E) surgical repair of the lacerations.

**Correct Answer** **A**

**Explanation** In children who sustain blunt abdominal trauma, CT scan can define injuries to the abdominal viscera quite well. Conservative treatment in the stable patient with follow-up CT scan, if needed, will result in reducing the rate of abdominal exploration in the patient with stable visceral injuries to less than 15%.

**157.** The anatomical relationship of the left internal spermatic vein(s) to the left ureter in the retroperitoneum 2 cm above the internal inguinal ring is:

A) anterior and lateral.
B) anterior and medial.
C) posterior and lateral.
D) posterior and medial.
E) medial and adjacent.

**Correct Answer** **A**

**Explanation** The left spermatic vein courses from the internal ring in the anterior body wall to the renal vein in the retroperitoneum. At the area of the internal ring, the vein is anterior and lateral to the ureter which crosses the iliac vessels. The vein crosses anterior to the ureter in its mid-portion and inserts into the left renal vein medial to the upper ureter. In ligating a varicocele, venous ligation may be carried out within the inguinal canal or intra-abdominally, in which case this anatomic relationship is important to know.

**158.** A 72-year-old man with a large renal cell carcinoma has right hip pain. Bone scan shows multiple metastases and plain films of the right femur show a 4.0 cm lytic lesion. Management should include:

A) external beam radiation therapy to the femur.
B) strontium-89.
C) open stabilization of the femur.
D) pain management.
E) immunotherapy.

**Correct Answer** **C**

**Explanation** Surgical treatment of bony metastases from renal cell carcinoma is indicated for weight-bearing bones with lytic lesions of greater than 3 cm. Although this patient has a poor prognosis, average survival will be one year and, should he develop a femur fracture, the quality of his remaining survival will be markedly diminished.

**159.** Compared to a Kock pouch, a continent urinary diversion using detubularized right colon with a tunneled ureteral reimplant has a higher rate of:

A) ureteral obstruction.
B) nocturnal incontinence.
C) difficult catheterization.
D) bowel obstruction.
E) electrolyte disorders.

**Correct Answer** **A**

**Explanation** A Kock pouch uses an intussuscepted nipple valve afferent limb to prevent reflux and has a lower incidence of ureteral obstruction than a tunneled reimplantation. There is no apparent difference between the two techniques in the incidence of incontinence. A Kock pouch is associated with a higher rate of difficult catheterization of the efferent valve.

**160.** A 23-year-old man undergoes cavernosometry for evaluation of erectile dysfunction. After prostaglandin E<sub>1</sub> (20 mcg) is injected, the intracorporeal pressure (ICP) does not rise within ten minutes. After two minutes of saline infusion (100 cc/min), the ICP is 30 mm Hg. He has:

A) normal arterial inflow and normal ability to store blood intracavernosally.
B) failure to store blood intracavernosally.
C) normal arterial inflow only.
D) abnormal arterial inflow and inability to store blood intracavernosally.
E) abnormal arterial inflow and normal ability to store blood intracavernosally.

**Correct Answer** **B**

**Explanation** The dynamic infusion cavernosometry shows that since the intracavernous pressure (ICP) did not rise following PGE<sub>1</sub> injection (before saline infusion), the patient either had poor arterial in-flow and/or failure to store intracavernosally. The fact that his ICP did not rise following saline infusion suggests that the patient does not have the ability to store blood intracavernosally. Cavernosometry cannot provide any information as to the status of the arterial system.

**161.** The most frequent complication after partial nephrectomy is:

A) bleeding.
B) urinary fistula.
C) renal failure.
D) UTI.
E) renal infarction.

**Correct Answer** **B**

**Explanation** In a recently reported large series of partial nephrectomies, urinary fistula was reported as the most frequent complication (17%), followed by renal failure, infection, bleeding, and vascular thrombosis. Fistulas occurred more frequently in larger, centrally located tumors and those removed with an ex vivo approach.

**162.** The best test to diagnose acute bacterial cystitis prior to therapy is:

A) nitrite test.
B) microscopy.
C) leukocyte esterase test.
D) streak plate culture.
E) pour plate culture.

**Correct Answer** **B**

**Explanation** Microscopic examination of the urine is the most rapid and inexpensive means to diagnose UTIs and determine the response to therapy. It provides useful information concerning the likely invaders and whether cultures and susceptibility tests might be needed. The urine may be examined with or without staining and with or without centrifugation, depending on the expertise of the examiner. Unstained specimens are useful for rapid diagnosis. Gram stains provide more reliable information about the potential pathogen.

**163.** A 42-year-old woman has a blood pressure of 180/115 mm Hg. Serum chemistries include: BUN 14 mg/dl, creatinine 0.9 mg/dl, Na 140 mEq/l, CO<sub>2</sub> 28 mEq/l, K 3.1 mEq/l, Cl 100 mEq/l, calcium 10.4 mg/dl, and phosphorus 3.4 mg/dl. The plasma renin is 0.5 mg/ml/hr (normal: 1.0-8.0). The most likely diagnosis is:

A) pheochromocytoma.
B) renal tubular acidosis.
C) renal artery stenosis.
D) Page kidney.
E) primary hyperaldosteronism.

**Correct Answer** **E**

**Explanation** The findings of hypertension, hypokalemia, and suppressed plasma renin activity are consistent with primary hyperaldosteronism. With renal artery stenosis or a Page kidney, the plasma renin level should be elevated. The serum CO<sub>2</sub> of 28 mEq/l mitigates against renal tubular acidosis. There are no data to support a diagnosis of pheochromocytoma in this patient.

**164.** A 38- year- old man has testicular pain two months after testicular sperm extraction for azoospermia. He has a 1 cm hypoechoic lesion in his right testis on ultrasound. Tumor markers are negative. The next step is:

A) repeat tumor markers.
B) serum testosterone.
C) radical orchiectomy.
D) repeat scrotal ultrasound in three months.
E) testicular biopsy.

**Correct Answer** **D**

**Explanation** Intratesticular lesions are common after testis biopsies including testicular sperm extraction. Most of these lesions are hypoechoic and reflect inflammation or small hematomas. Although serum testosterone levels may be transiently affected, this test will not affect management. Testicular biopsy is unlikely to be helpful. A repeat scrotal ultrasound in three months is likely to show resolution of the lesion.

**165.** A 68-year-old man with end-stage renal failure due to chronic glomerulonephritis has been on peritoneal dialysis for three years. He is anuric and asymptomatic. An ultrasound study reveals several simple non-echogenic cysts involving the left kidney, and no right renal masses are seen. The best management is:

A) left nephrectomy.
B) CT scan.
C) renal arteriography.
D) repeat ultrasound in two years.
E) conversion to hemodialysis.

**Correct Answer** **D**

**Explanation** Acquired renal cystic disease (ARCD) is known to occur in up to 45% of patients with chronic renal failure. Retrospective studies have indicated that renal cell carcinoma may develop in a small percentage (< 10%) of patients with ARCD. For this reason, periodic ultrasound is now recommended for patients on chronic dialysis. It is appropriate to consider CT, arteriography, or surgical intervention only when the ultrasound suggests a complex cyst or tumor. Both hemodialysis and peritoneal dialysis have been associated with an equivalent incidence of ARCD, and there is no evidence that conversion from one form of dialysis to another influences this disease.

**166.** The bladder neoplasm arising from remnants of the allantoic duct is:

A) adenocarcinoma.
B) inverted papilloma.
C) nephrogenic adenoma.
D) squamous carcinoma.
E) rhabdomyosarcoma.

**Correct Answer** **A**

**Explanation** Adenocarcinomas may arise from the remnant of allantoic duct (urachus), in exstrophic bladders, and among patients with uretero-intestinal diversion.

**167.** Abnormalities of chromosome 3p (short arm of chromosome 3) are associated with:

A) oncocytoma.
B) clear cell renal cell carcinoma.
C) acquired renal cystic disease.
D) transitional cell carcinoma.
E) papillary renal cell carcinoma.

**Correct Answer** **B**

**Explanation** The most consistent cytogenetic abnormality identified in renal cell carcinoma are deletions and translocations involving the short arm of chromosome 3 (3p). This is now recognized as the genetic aberration associated with Von Hippel-Lindau disease. This abnormality, however, is primarily associated with clear cell, granular and sarcomatoid renal cell carcinoma, but not papillary carcinoma, oncocytoma, or angiomyolipoma. It is not associated with any cystic disease except that observed in VHL disease.

**168.** A 62-year-old man has a squamous cell carcinoma of the penis with distant metastases. The most effective drug combination is:

A) cyclophosphamide and methotrexate.
B) doxorubicin and cisplatin.
C) actinomycin and vincristine.
D) bleomycin and cisplatin.
E) mitomycin and cisplatin.

**Correct Answer** **D**

**Explanation** Of the combinations of agents listed, the most active for squamous cell carcinoma of the penis are bleomycin and cisplatin. While responses in the 15-25% range have been reported, most are of short duration.

**169.** The characteristic that distinguishes primary hypoadrenalism from secondary (pituitary) hypoadrenalism is:

A) hypotension.
B) metabolic alkalosis.
C) cutaneous hyperpigmentation.
D) hypernatremia.
E) hyperkalemia.

**Correct Answer** **C**

**Explanation** Since the amino acids of ACTH are identical to the terminal amino acids of melanocyte stimulating hormone (MSH), over-production of ACTH results in cutaneous hyperpigmentation. Adrenal loss results in lack of negative feedback and over-production of ACTH. Pituitary failure, on the other hand, results in a lack of ACTH.

**170.** A six-year-old girl with recurrent symptomatic UTIs has a normal renal ultrasound. A VCUG is shown (see figure). The best management is:

A) antibacterial therapy.
B) urethral meatotomy.
C) internal urethrotomy.
D) single urethral dilation.
E) repeated urethral dilations.

**Correct Answer** **A**

**Explanation** The VCUG is normal. Formerly, a dilated urethra proximal to the meatus in a voiding cystogram in a female was thought to represent distal urethral stenosis. However, on another frame of this voiding cystogram, as is commonly seen, the urethra is of uniform caliber from the bladder neck to the urethral meatus. In addition, no correlation exists between the size of the urethral meatus, the radiographic picture, and the incidence of urinary infection in girls. Controlled studies have shown that instrumentation, whether it be by meatotomy, internal urethrotomy or urethral dilation, has no effect on the recurrence rate of urinary infections. Therefore, the correct answer is antibacterial therapy which may be aided by a timed-voiding regimen.

**171.** Seminal emission depends on an intact:

A) parasympathetic and somatic nervous systems.
B) sympathetic nervous system.
C) parasympathetic nervous system.
D) sympathetic and parasympathetic nervous systems.
E) sympathetic and somatic nervous systems.

**Correct Answer** **B**

**Explanation** Emission is defined as the deposition of seminal fluid into the posterior urethra by the vasa deferentia and the seminal vesicles. Ejaculation is the forceful expulsion of seminal fluid out the urethral meatus by contraction of the bulbocavernosus and ischiocavernosus muscles. Since the vasa and the seminal vesicles are innervated primarily by the sympathetic nervous system, emission is under control of the sympathetic nervous system. Alpha-adrenergic nerve stimulation causes not only contraction of the seminal vesicles and vasa deferentia but also closure of the bladder neck. Ejaculation is the result of somatic nerve stimulation of the periurethral striated musculature. The parasympathetic nervous system is not directly involved with either emission or ejaculation.

**172.** A four-year-old girl has a left flank mass and hematuria. Her hematocrit is 50%. The most likely diagnosis is:

A) renal vein thrombosis.
B) angiomyolipoma.
C) Wilms' tumor.
D) hydronephrosis.
E) polycystic kidney disease.

**Correct Answer** **C**

**Explanation** Wilms' tumor may produce erythropoietin in a manner similar to renal cell carcinoma and hence may manifest erythrocytosis. At this age, Wilms' tumor is more likely than renal cell carcinoma. Renal vein thrombosis is rare in this age group but would most likely present with pain, hematuria or proteinuria without erythrocytosis. Hydronephrosis, polycystic disease and tuberous sclerosis are not usually associated with erythrocytosis.

**173.** While resecting the left lobe of the prostate during a TURP, a large capsular perforation with venous bleeding is noted. Despite spinal anesthesia the patient notes abdominal pain. The best management is:

A) complete the TURP.
B) serum sodium determination before completing the procedure.
C) convert to open prostatectomy.
D) stop procedure and place a urethral catheter.
E) change to an electrovaporization technique.

**Correct Answer** **D**

**Explanation** Extravasation or perforation of the capsule complicates 2% of all TURP'S. Patients may experience abdominal pain, back pain, and nausea or vomiting, even during spinal anesthesia. Bleeding should be controlled as best as possible. The majority of these patients can be managed by urethral catheter drainage and cessation of the operation.

**174.** A two-year-old boy undergoes a left inguinal exploration for a nonpalpable left testis. At the internal ring, a vas deferens is noted to end blindly. The best next step is:

A) close.
B) perform laparoscopy.
C) explore peritoneal cavity.
D) explore the retroperitoneum.
E) close, then obtain a CT scan.

**Correct Answer** **C**

**Explanation** Although suggestive of the absence of the testis, the finding of a blind-ending vas deferens does not prove this. Proof comes with the exploration of the spermatic vessels which is best done with an intraabdominal exploration. Laparoscopy would not be practical in this patient since the groin is already open. In this clinical setting, the incision could be extended superiorly and the peritoneal cavity entered at the level of the internal ring. If the testis is absent, the vessels can often be traced to the point of the blind-ending vas. If the testis is present, it will be found higher in the abdominal cavity even though it is truly a retroperitoneal structure.

**175.** A 57- year- old man undergoes a left radical nephrectomy for renal cell cancer. Postoperatively, he has a prolonged ileus with nausea and vomiting and persistent abdominal pain radiating to the back. There is serous drainage from the wound. Abdominal ultrasound shows a retroperitoneal fluid collection. The next step should be:

A) analysis of wound fluid for pH and amylase.
B) analysis of wound fluid for creatinine and BUN.
C) surgical exploration and drainage.
D) gastrografin small bowel series.
E) gallium scan.

**Correct Answer** **A**

**Explanation** An unrecognized injury to the pancreas may result in a pancreatic fistula. These are usually accompanied by symptoms of pancreatitis with wound drainage of fluid with high pH and amylase content. Radiologic studies will usually show fluid in the retroperitoneum. When drained adequately, the tract will usually heal spontaneously, but hyperalimentation may be required.

**176.** A 25-year-old man with carcinoma of the testis has undergone treatment with chemotherapy including bleomycin. He now requires lower abdominal surgery. The study most important in selecting general or regional anesthesia is:

A) SGOT, SGPT, LDH.
B) BUN, serum creatinine.
C) expiratory spirometry.
D) electrocardiography.
E) complete blood count.

**Correct Answer** **C**

**Explanation** In 1978, Nygaard and associates reported on the death of 4/8 patients having an esophageal resection six weeks after bleomycin and radiation therapy. Subsequently, Goldiner reported five deaths in 100 patients who received bleomycin prior to surgery. High oxygen concentration was implicated as the cause of respiratory failure, along with increased amounts of crystalloid. The only difference noted in Goldiner's patients who died was impairment of pulmonary function tests compared with normal pulmonary function in the patients who survived. It has been suggested that abnormal pulmonary function, demonstrated by expiratory spirometry or formal pulmonary function tests, should be performed in every patient who is contemplating general anesthesia following bleomycin-containing chemotherapy.

**177.** A 54-year-old woman has severe pain in the suprapubic region and pain with adduction of her legs two weeks after a Marshall-Marchetti- Krantz bladder neck suspension. She has a 'waddling' gait and the pain is reproduced by pressure on her pubic region. The study most likely to confirm the etiology of her pain is:

A) CT scan of pelvis.
B) plain x-ray of pelvis.
C) cystoscopy.
D) MRI scan of lumbosacral spine.
E) radionuclide bone scan.

**Correct Answer** **E**

**Explanation** Osteitis pubis is a poorly understood non-infectious inflammatory condition that may complicate up to 2.5% of all Marshall-Marchetti-Krantz procedures. It has been reported after transurethral collagen injections, transrectal prostate biopsy, TURP, radical prostatectomy, cryotherapy of the prostate and other urological procedures. Exclusion of an infectious osteomyelitis must be considered, and radiographic findings are often not found early in the process. Radionuclide bone scan is an effective approach to early diagnosis.

**178.** Thiazide diuretics are:

A) useful in treating hypercalcemia.
B) contraindicated in calcium nephrolithiasis.
C) specifically indicated in idiopathic hypercalciuria.
D) inhibitors of sodium and chloride reabsorption in the collecting duct.
E) able to increase both renal blood flow and GFR.

**Correct Answer** **C**

**Explanation** Thiazide diuretics are able to diminish blood volume acutely by inhibiting sodium and chloride reabsorption at the distal convoluted tubule and thus diminish both renal blood flow and glomerular filtration rate. Thiazide diuretics are indicated in patients with calcium nephrolithiasis because they decrease urinary calcium. In nephrogenic and partial pituitary diabetes insipidus, thiazides produce an antidiuresis due to the sodium-depleting effects, causing a contraction of the extracellular fluid volume with less delivery of filtrate to the distal nephron. Furosemide, not thiazides, is useful in treating hypercalcemia.

**179.** The most important factor responsible for the frequent recurrence of UTIs in an otherwise healthy, young woman is:

A) adhesive fimbriae of uropathogens.
B) specific receptors on urothelial cells.
C) presence of pathogenic coliforms in stool.
D) feminine hygiene practices.
E) method of contraception.

**Correct Answer** **B**

**Explanation** Properties of uropathogens, sexual activity, feminine hygiene practices and the use of an IUD and/or spermicide may increase the frequency of UTIs in predisposed women, however they are not the most important etiologic factors. Many women have uropathogenic bacteria present in their bowel, use various contraceptive and hygiene methods, and are sexually active without developing infections. E. coli must colonize the peri-urethral area before an uncomplicated infection can occur. Coliform organisms are recovered only rarely from the region of the vaginal vestibule and external urethra in otherwise healthy women who do not have recurrent UTIs. It is postulated by most researchers that host factors rather than specific pathogenicity of the micro-organisms are the prime determinants of colonization. E. coli tend to adhere more to vaginal and buccal epithelial cells obtained from women with recurrent infection than to controls. This explains why certain women are prone to frequent recurrent infections. It would also explain why women with asymptomatic bacteruria are more prone to recurrent infection with marriage and pregnancy and

**180.** A 65- year- old man with metastatic prostate cancer is treated with an LH- RH agonist. Two years later, he has a worsening bone scan, retroperitoneal adenopathy, and a PSA level of 500 ng/ml. The plasma testosterone is 30 ng/dl (normal 300- 800 ng/dl). The therapy most likely to provide objective tumor regression is:

A) chemotherapy.
B) bilateral orchiectomy.
C) addition of an antiandrogen.
D) strontium-89.
E) prednisone.

**Correct Answer** **A**

**Explanation** Although there are few long-term complete responses using chemotherapy in patients with hormone refractory prostate cancer, objective responses with PSA reductions are found in approximately 50% to 70% of patients treated with estramustine and Vinblastine or mitozanthrone. Bilateral orchiectomy is of little value in a patient with castrate levels of testosterone. Addition of an anti-androgen in this situation can decrease the serum PSA level temporarily, but is less effective than chemotherapy. Strontium is effective for symptomatic control of bone pain. Steroids occasionally can be useful but usually only if combined with some other therapy such as Suramin or ketoconazole.

**181.** A 62-year-old man has new onset bilateral hydronephrosis four years after radical cystectomy and ileal conduit for bladder cancer. Upon catheterizing the stoma, 100 cc of urine is obtained. The most likely cause of the hydronephrosis is:

A) stomal stenosis.
B) chronic ureteral reflux.
C) ureteral obstruction due to recurrent cancer.
D) ureteral obstruction due to fibrosis.
E) antiperistaltic orientation of conduit.

**Correct Answer** **A**

**Explanation** Stomal stenosis is one of the most common long-term complications of ileal conduit diversion. Outlet stenosis leads to increased residual urine and high pressure in the conduit which is transmitted across refluxing ureters to the upper tracts resulting in hydronephrosis and upper tract deterioration. Neither recurrent cancer nor simple postoperative fibrosis are likely to appear suddenly four years after surgery. Chronically ischemic conduits have small volumes and would not retain a residual of 100 cc of urine. Urodynamic studies will show high pressure in the conduits.

**182.** A 26- year- old infertile body builder with a five- year history of heavy anabolic steroid use is azoospermic 12 months after discontinuing all steroids. His serum testosterone is 150 ng/dl (normal 300- 900), and FSH is normal. The next step is:

A) observation.
B) testosterone replacement.
C) hCG.
D) testicular biopsy.
E) clomiphene citrate.

**Correct Answer** **C**

**Explanation** The non-medical use of anabolic steroids by athletes is a potentially significant cause of infertility in male adolescents and adults. It has been estimated that 3-12% of male athletes of high school age in the United States have used steroids. Infertility associated with anabolic steroid use commonly presents as oligospermia and azoospermia along with abnormalities of sperm motility and morphology. As with many of the other steroid side effects the semen parameter deficits are thought to be reversible and consequently the discontinuation of all steroids is an appropriate first course of therapy. In athletes who have been on chronic anabolic steroids, doubt had been cast on the theory that the endocrine imbalance induced by long-term metabolic steroids is reversible. Successful gonadotropin replacement is the best initial therapy for this particular patient.

**183.** A 58- year- old man with recurrent superficial bladder tumors previously treated with intravesical BCG is evaluated for a positive voided cytology. Cystoscopy discloses no intravesical tumors, random bladder biopsies are negative, and bilateral retrograde pyelograms and upper tract cytologies are normal. The next step is:

A) CT scan.
B) ureteroscopy.
C) repeat BCG.
D) prostatic urethral biopsy.
E) urinary NMP level.

**Correct Answer** **D**

**Explanation** A positive cytology after BCG therapy with a visually and biopsy negative bladder usually indicates extravesical recurrence either in the upper tracts or prostate. Thorough evaluation of both sites is indicated in this patient. Neither a CT scan nor ureteroscopy is indicated or would be helpful since the retrograde pyelograms and upper tract cytologies are normal. Repeat BCG is not indicated unless there is documented evidence of tumor recurrence. A urinary NMP level is not helpful since a voided cytology is already positive, and in any event will not help localize the tumor. Of the choices listed, prostate biopsy is the best choice to assess for the presence of prostatic TCC.

**184.** The bacterial virulence factor present in most pyelonephritogenic strains of E. coli is:

A) aerobactin.
B) hemolysin.
C) O-antigen.
D) K-antigen.
E) P-fimbria.

**Correct Answer** **E**

**Explanation** The two most important markers for E. coli virulence are mannose-resistant hemagglutination (MRHA) of human red blood cells and P blood group-specific adhesions (P -fimbriae). The p-fimbria on the bacterial surface allow the bacteria to adhere to urothelial cells. This adherence aids the ascent of the bacteria to the upper urinary tract.

**185.** A 12-year-old girl with spina bifida and an ileal conduit undergoes ileocecal continent diversion. She has persistent fecal incontinence with watery diarrhea six months after surgery. The best treatment is:

A) cholestyramine.
B) Vitamin B<sub>12</sub>.
C) Lomotil.
D) oxybutynin.
E) Imodium.

**Correct Answer** **A**

**Explanation** Diarrhea after ileocecal resection is usually related to loss of the ileocecal valve and is a self-limited process that resolves in a few months. Severe and persisting diarrhea after ileocecal resection is a very uncommon complication, which may be related to bile acid metabolism.

**186.** A pelvic CT scan in a 34-year-old woman with recurrent UTIs reveals air in the bladder, focal bladder wall thickening, and indentation of the right lateral bladder wall. The most likely diagnosis is:

A) carcinoma of the sigmoid colon.
B) Crohn's disease.
C) carcinoma of the bladder.
D) diverticulitis.
E) emphysematous cystitis.

**Correct Answer** **B**

**Explanation** This patient has an enterovesical fistula due to Crohn's disease. In this disorder, the bladder is indented on the right lateral and/or anterior aspect and gas can be seen in the bladder in 90% of cases on CT scan. Carcinoma of the sigmoid colon could cause this picture but the left wall of the bladder would be indented. Carcinoma of the bladder rarely causes enterovesical fistulae. Emphysematous cystitis is a generalized disease involving the entire bladder wall. She is young to have clinically significant diverticulitis.

**187.** The most common primary malignant testis tumor of germinal origin in children is:

A) teratoma.
B) seminoma.
C) yolk sac tumor.
D) Leydig cell tumor.
E) teratocarcinoma.

**Correct Answer** **C**

**Explanation** Yolk sac tumor accounts for approximately 60% of prepubertal testis tumors. Leydig cell tumors are of stromal origin.

**188.** A 46-year-old woman has a six-year history of medically-controlled hypertension. An abdominal bruit and microscopic hematuria are noted on physical exam and urinalysis, respectively. IVP and cystoscopy are normal. Arteriography reveals a cirsoid arteriovenous malformation with multiple small channels in the upper pole of the right kidney. The R/L renal vein renin ratio is 1.4:1. The best management is:

A) antihypertensive therapy.
B) embolization.
C) angioplasty.
D) partial nephrectomy.
E) nephrectomy.

**Correct Answer** **A**

**Explanation** Hypertension and hematuria are the most common symptoms of congenital arteriovenous malformations. The natural history of this disease is variable. Significant hematuria or hypertension with lateralizing renal vein renins are indications for surgical or percutaneous therapy. However, patients with microscopic hematuria or controlled hypertension can be treated conservatively.

**189.** The spread of urinary extravasation secondary to urethral injury below the urogenital diaphragm, when associated with a tear in Buck's fascia, is limited by the fasciae of:

A) Denonvilliers' and Colles'.
B) Colles' and Scarpa's.
C) Scarpa's and Denonvilliers'.
D) dartos and Colles'.
E) dartos and Denonvilliers'.

**Correct Answer** **B**

**Explanation** When infradiaphragmatic urinary extravasation extends through Buck's fascia, it is limited only by Colles' fascia which attaches posteriorly at the triangular ligament and laterally at the fascia lata of the thigh. Colles' fascia is continuous anteriorly with Scarpa's fascia which extends superiorly to the coracoclavicular fascia. Therefore, both Colles' and Scarpa's fascia limit such an extravasation. Such an extravasation, particularly when associated with infection (periurethral phlegmon), can result in edema and necrosis of the skin of the penis, scrotum, and anterior body wall.

**190.** The initial nephrostomy tube puncture site in a horseshoe kidney compared to that in a normally positioned kidney is more:

A) medial and through a posterior calyx.
B) lateral and through an anterior calyx.
C) medial and through an anterior calyx.
D) lateral and through a posterior calyx.
E) inferior and through an anterior calyx.

**Correct Answer** **A**

**Explanation** Horseshoe kidneys often contain calculi, possibly as a result of high insertion of the ureter and relative stasis of urine. Patients with small, nonobstructing calculi in nondependent locations may be treated with ESWL. However, obstructing calculi or those that are large or in dependent locations are best treated with percutaneous techniques. The initial puncture is more medial than that for normally positioned kidneys and should be placed through a posterior calyx.

**191.** The most important feature in predicting hydronephrosis in patients with myelodysplasia is:

A) significant vesicoureteral reflux.
B) detrusor hyperreflexia.
C) decreased detrusor compliance.
D) leak point pressure > 40 cm of water.
E) dyssynergic external sphincter.

**Correct Answer** **D**

**Explanation** While all of the factors listed can produce hydronephrosis, a leak pressure of > 40 cm of water, if left untreated, has uniformly been associated with progressive hydronephrosis. Patients with an elevated leak pressure should be treated aggressively with clean intermittent catheterization and anticholinergics or vesicostomy to prevent hydronephrosis.

**192.** The most prominent pharmacologic effect of imipramine on the lower urinary tract is:

A) central nervous system excitation.
B) direct smooth muscle inhibition.
C) alpha-adrenergic blockade.
D) blockade of norepinephrine synthesis.
E) opioid antagonism.

**Correct Answer** **B**

**Explanation** Imipramine's most prominent effect is direct smooth muscle inhibition. It also has a systemic anticholinergic effect, but this is not as clinically significant on the bladder as its direct relaxant effect. Imipramine also causes blockade of norepinephrine re-uptake and this explains its alpha-adrenergic effect on the bladder neck.

**193.** A 47-year-old man has biopsy-proven squamous cell carcinoma invading the glans penis. Both groins are clinically negative. Initial treatment should be:

A) wide local excision.
B) distal penile amputation.
C) wide local excision and bilateral superficial and deep groin dissection.
D) distal penile amputation and bilateral superficial and deep groin dissection.
E) wide local excision and external radiation to both groins.

**Correct Answer** **B**

**Explanation** The most important initial mission of therapy of squamous cell carcinoma of the penis is adequate treatment of the primary lesion. This can be accomplished in this patient, achieving 2 cm margins of excision, by distal penectomy. In addition to excellent control of the primary lesion, pathologic evaluation of the lesion will allow a more informed decision as to the necessity and extent of surgical therapy of potentially involved nodal groups.

**194.** A seven- year- old girl has urgency, frequency, and diurnal enuresis. She is wet every day requiring clothes changes twice daily. Physical exam and urinalysis are normal. She is placed on oxybutynin 5 mg BID and timed voiding. She returns two weeks later and reports no change in the diurnal enuresis. The next step is:

A) MRI scan of the lumbosacral spine.
B) imipramine 25 mg BID.
C) videourodynamics.
D) voiding diary.
E) urethral dilation.

**Correct Answer** **D**

**Explanation** Diurnal enuresis occurs in 5% of seven-year-old school age children. In most children, the underlying problem is infrequent voiding. Timed voiding programs alone will be successful in the majority of children but require several months to be effective. This child has not had enough time to determine if the program will be effective. Changing to another medication or proceeding with urodynamic evaluation at this time is premature. Urethral dilation is not indicated for the treatment of enuresis. Some authors have suggested that an occult tethered cord is responsible for persistent diurnal enuresis. However, imaging of the spine should be reserved for those children with significant abnormalities on neurologic exam or urodynamic evaluation.

**195.** The treatment for urethral prolapse which results in the greatest success and lowest recurrence or complication rate is:

A) surgical excision.
B) suture-around-a-catheter technique.
C) cryosurgery.
D) vaginourethral plication.
E) topical estrogen application.

**Correct Answer** **A**

**Explanation** Recurrence of urethral prolapse is highest with medical management. Urethral stricture, prolonged pain, or technical difficulty is associated with all except simple surgical excision or reduction, which is the most efficient form of management. The problem is most frequently seen in older women and young black girls.

**196.** A 23- year- old man with AIDS has a three- day history of painful right testicular swelling. The testis is diffusely swollen with a hard lesion in the upper pole. After two weeks of oral antibiotic therapy, the tenderness has resolved but the mass persists. Ultrasound of the scrotum shows a 1.5 cm mixed echogenic mass in the right testicle and a normal left testicle. Serum tumor markers and abdominal CT scan are normal. The next step is:

A) inguinal orchiectomy.
B) continue antibiotics and re-evaluate in two weeks.
C) PPD skin test.
D) scrotal exploration.
E) aspirate mass for culture.

**Correct Answer** **A**

**Explanation** Patients with the acquired immunodeficiency syndrome are at risk for various genitourinary infections and initial treatment of this patient with antibiotics is appropriate. However, these patients may be at greater risk for testicular tumors and the presence of an intraparenchymal testicular mass merits inguinal exploration.

**197.** A 50- year- old African American woman has passed multiple calcium oxalate dihydrate stones. After initiating medical management with allopurinol and potassium citrate, repeat metabolic evaluation demonstrates serum calcium of 13.4 mg/dl, phosphorus 3.7 mg/dl, PTH 38 pg/dl (normal < 65 pg/dl), and urinary calcium of 598 mg per day (normal < 250 mg/day). The next step is:

A) neck exploration.
B) abdominal CT scan.
C) calcium load test.
D) chest CT scan.
E) fasting urinary calcium.

**Correct Answer** **D**

**Explanation** Calculi may be the initial feature of sarcoidosis in a small percentage of patients. In those individuals who present with hypercalcemia, normal serum phosphate, and normal serum PTH, sarcoidosis should be suspected. Increased Vitamin D levels in these patients will increase the intestinal absorption of calcium and suppress PTH secretion. Steroids will decrease intestinal absorption of calcium and should normalize both hypercalcemia and hypercalciuria.

**198.** Compared to intracavernous injection of papaverine for the treatment of erectile dysfunction, prostaglandin E1 is more likely to cause:

A) mild liver function abnormalities.
B) pain on injection.
C) priapism.
D) fibrosis.
E) systemic vasodilation.

**Correct Answer** **B**

**Explanation** Other than an increased probability of pain on injection, prostaglandin E<sub>1</sub> appears to have fewer complications than papaverine. It is cleared after one pass through the lungs, so that systemic effects are unlikely.

**199.** A 38- year- old woman with extensive prior pelvic radiation has a long left distal ureteral stricture. At the time of psoas hitch and ureteral reimplant, an omental wrap is planned. The vascular supply of the omentum is most reliably based upon which artery:

A) splenic.
B) gastroduodenal.
C) right gastroepiploic.
D) short gastric.
E) left gastroepiploic.

**Correct Answer** **C**

**Explanation** The blood supply of the omentum arises from the gastroepiploic arteries. The right gastroepiploic is best chosen for development of the wrap as the left is relatively small and more variable in its anatomy.

**200.** The neoplasm most frequently associated with bladder exstrophy is:

A) squamous cell carcinoma.
B) transitional cell carcinoma.
C) adenocarcinoma.
D) rhabdomyosarcoma.
E) nephrogenic adenoma.

**Correct Answer** **C**

**Explanation** Adenocarcinoma may develop in the untreated exstrophied bladder emphasizing the need for definitive therapy. Development of this type of neoplasm may be related to the differentiation of the bladder from the cloaca.

**201.** A 45-year-old woman has chronic indwelling polyurethane double-J stents for bilateral lower ureteral strictures from radiation therapy for cervical carcinoma. She experiences gross painless hematuria and cystoscopic examination reveals profuse bleeding from the right ureteral orifice. The best management is:

A) remove the right stent.
B) arteriogram.
C) CT scan of the abdomen.
D) exchange for softer stent.
E) exploratory laparotomy.

**Correct Answer** **B**

**Explanation** This clinical scenario should raise serious concerns a uretero-iliac fistula. This has been reported most commonly after the development of radiation-induced stricture disease for gynecologic malignancies and after aortoiliac reconstructive procedures. Arteriography may not be diagnostic, but, if it is, temporary balloon occlusion can be life-saving. Laparotomy would be extremely difficult in most previously irradiated patients.

**202.** A 45- year- old man with good erectile function has a failed renal transplant in the right iliac fossa with arterial anastomosis to the internal iliac artery. In order to avoid erectile dysfunction, the second allograft should be placed in the:

A) left renal fossa, end-end to the splenic artery.
B) right renal fossa, end-side to the aorta.
C) left iliac fossa, end-side to the external iliac artery.
D) left iliac fossa, end-end to the internal iliac artery.
E) right iliac fossa after transplant nephrectomy.

**Correct Answer** **C**

**Explanation** Many patients report a return to pre-illness levels of sexual activity after transplantation. To avoid erectile dysfunction after retransplantation, the internal iliac artery should not be used if it has been used on the contralateral side or if the surgical technique for the first transplant is unknown. Bilateral internal iliac ligation can cause erectile dysfunction due to vascular insufficiency. It is best to use the contralateral iliac fossa with an end-side anastomosis to the external iliac artery.

**203.** A 58-year-old man has frequency and nocturia, an AUA Symptom Score of 22, peak urinary flow rate of 8 ml/sec, and postvoid residual of 200 ml. The prostate is 70 gm with a prominent median lobe. Sitting systolic blood pressure is 140 mm Hg. An orthostatic blood pressure change of 25 mm Hg is not associated with postural symptoms. He is concerned about developing ejaculatory dysfunction. The best treatment is:

A) finasteride.
B) doxazosin.
C) TUIP.
D) transurethral vaporization of the prostate.
E) TUMT.

**Correct Answer** **B**

**Explanation** Orthostatic hypotension is not a contraindication for alpha-blockers providing the blood pressure change is not associated with postural symptoms. The effectiveness of alpha-blockers is independent of prostate size. In those subjects with very large prostates, alpha-blockers are more effective than 5-alpha-reductase inhibitors. All surgical interventions may cause retrograde ejaculation.

**204.** The type of renal artery disease in which size and function of the involved kidney are best preserved is:

A) atherosclerosis.
B) medial fibroplasia.
C) intimal fibroplasia.
D) Takayasu's arteritis.
E) perimedial fibroplasia.

**Correct Answer** **B**

**Explanation** Medial fibroplasia of the renal artery rarely progresses to complete occlusion and it is unusual for patients to experience progressive loss of renal function. All of the other listed forms of renal artery disease carry a significant risk of progression to complete occlusion with loss of renal function.

**205.** A 28- year- old C-6 quadriplegic man with recurrent urosepsis cannot perform clean intermittent catheterization and has unreliable home help. He has failed two external sphincterotomies and developed urethral erosion following indwelling urethral catheter drainage. The best management is:

A) repeat external sphincterotomy.
B) vesicostomy.
C) ileal conduit urinary diversion.
D) continent urinary diversion.
E) ileovesicostomy.

**Correct Answer** **E**

**Explanation** An incontinent ileovesicostomy avoids the risks of chronic catheter drainage. Continent urinary diversion is inappropriate in this social setting. External sphincterotomy has failed twice. Supravesical urinary diversion may involve more extensive surgery than necessary. Vesicostomy is difficult to manage due to difficulty in securing a collecting device on the abdominal wall.

**206.** A 46-year-old man with a high velocity gunshot wound to his right lower abdomen has a normal urinalysis. IVP reveals prompt bilateral excretion of contrast with no extravasation. During laparotomy a small bowel perforation and right iliac vein injury are repaired. The next step is:

A) no further evaluation.
B) ureteral exploration.
C) intravenous injection of indigo carmine.
D) bladder filling with methylene blue.
E) retrograde ureteropyelography.

**Correct Answer** **B**

**Explanation** The incidence of ureteral injuries from penetrating trauma is low. These injuries may be difficult to detect because the IVP is either normal or indeterminate in approximately 70% and hematuria may be absent in up to 45%. Retrograde ureteropyelography or injection of dyes may miss such injuries because the blast injury often results in delayed sloughing. A high index of suspicion is necessary for diagnosis and the most accurate method is ureteral exploration.

**207.** A four-year-old girl has had three episodes of culture-proven bacterial cystitis. A renal ultrasound shows right hydronephrosis and a normal left kidney. The next step in management is:

A) renal scan.
B) diuretic renogram.
C) IVP.
D) VCUG.
E) cystoscopy and retrograde pyelogram.

**Correct Answer** **D**

**Explanation** Whether the renal ultrasound is normal or abnormal, a VCUG is necessary in the child with a UTI to rule-out major abnormalities. This patient has hydronephrosis and therefore should have a diuretic renal scan after the VCUG. An IVP is an acceptable alternative following the VCUG.

**208.** A 66- year- old man is undergoing implantation of a semi- rigid penile prosthesis. During dilation of the corpora, blood is noted at the urethral meatus and a tear is seen in the distal urethra. The best management is:

A) abort implantation and place urethral catheter.
B) abort implantation and place suprapubic tube.
C) continue implantation and place urethral catheter.
D) continue implantation and repair urethra.
E) continue implantation and place suprapubic tube.

**Correct Answer** **A**

**Explanation** The most common location for urethral laceration during implantation of a penile prosthesis is in the distal urethra, usually at the meatus. It is not generally possible to repair these injuries, and the procedure should be aborted allowing the laceration to heal over a Foley catheter for three to five days. Suprapubic diversion is unnecessary, and re-operation can be performed in four to six weeks.

**209.** A 32- week- male fetus has bilateral hydroureteronephrosis and a thick-walled bladder on ultrasound. The most important information needed to determine further prenatal care is:

A) renal parenchymal echogenicity.
B) presence and timing of onset of oligohydramnios.
C) degree of bladder dilation and thickening.
D) urine electrolytes and beta-2 microglobulin levels.
E) presence of a perinephric urinoma.

**Correct Answer** **B**

**Explanation** The most likely diagnosis in this fetus is posterior urethral valves based upon male sex, bilateral hydronephrosis, and a thick walled bladder. The clinical outcome of a child with severe posterior urethral valves is most specifically predicted by the presence or absence of oligohydramnios and when the onset of oligohydramnios was noted to occur. Increased renal echogenicity alone is not predictive, although in the setting of oligohydramnios, it is a poor prognostic indicator. Bladder dilation is not a good prognostic indicator. Urinary electrolytes have been shown to be useful as an indicator of renal salvageability only in the setting of oligohydramnios and in early gestation (18 to 24 weeks).

**210.** The major complication from long-term oral androgenic agents is:

A) BPH.
B) gynecomastia.
C) hepatotoxicity.
D) weight gain.
E) infertility.

**Correct Answer** **C**

**Explanation** Oral androgens are frequently ineffective because of poor absorption from the GI tract. They may cause weight gain (due to its steroidal effect), gynecomastia (due to the possibility of an increase in estrogen production from the exogenous androgens), and infertility (due to the suppressive effects of testosterone on LH and FSH). BPH secondary to exogenous androgens is a potential risk, albeit unproved at this time. However, the major complication from these oral steroids is the development of hepatic dysfunction and carcinomas in the liver. Oral agents should not be routinely used. Transdermal or intramuscular administration are preferred modes of delivery.

**211.** Aldosterone secretion is stimulated by:

A) hyperkalemia and hyponatremia.
B) hyperkalemia and hypernatremia.
C) hypokalemia and hyponatremia.
D) hypokalemia and hypernatremia.
E) ACTH.

**Correct Answer** **A**

**Explanation** Aldosterone production and secretion are regulated largely by angiotensin II and by changes in the plasma concentrations of sodium and potassium. The role of ACTH in the control of aldosterone secretion is generally believed to be only permissive, subservient to the renin-angiotensin system and potassium. Direct infusion of potassium and depletion of body sodium are both potent physiologic stimuli for the secretion of aldosterone.

**212.** A 24-year-old man has sudden onset of bilateral scrotal pain associated with mild nausea. Six days earlier he had seen his internist because of bilateral parotid gland swelling. On examination, the testicles are swollen and extremely tender to palpation. The most effective therapy for this condition is bed rest, scrotal elevation, and:

A) indomethacin.
B) steroids.
C) interferon.
D) estrogens.
E) gamma globulin.

**Correct Answer** **C**

**Explanation** This patient has mumps-associated orchitis, a condition noted in 18% of postpubertal patients. This is usually a self-limited condition that resolves over a 7 -10 day period. However, in over half of the patients with orchitis, testicular atrophy occurs. Recent work with interferon alpha-2B has shown that seven days of this therapy is capable of preventing testicular atrophy when administered after orchitis has developed. The bed rest and indomethacin will only help to decrease the pain of the orchitis but will not hasten its resolution or decrease the incidence of subsequent testicular atrophy. Gamma globulin, steroids, and diethylstilbestrol have been used to try to reduce the overall incidence of mumps orchitis. However, none of these modalities have been found to be of any benefit once orchitis has developed. Likewise none of them have been associated with limiting the subsequent occurrence of testicular atrophy.

**213.** A 65-year-old man has a 48-hour history of vomiting, diarrhea, and fever. He underwent a ureterosigmoidostomy at age 45 for bladder cancer. He is dehydrated, and his blood pressure is 80/40 mm Hg. His serum electrolytes are sodium 148 mEq/l, potassium 3.1 mEq/l, chloride 112 mEq/l, and carbon dioxide 9 mEq/l. He is vigorously resuscitated with intravenous 0.9% sodium chloride and sodium bicarbonate. Within one hour, he suffers a cardiopulmonary arrest and dies. The most probable cause of death is:

A) hypernatremia.
B) hyponatremia.
C) hypercalcemia.
D) hyperkalemia.
E) hypokalemia.

**Correct Answer** **E**

**Explanation** Patients who have undergone ureterosigmoidostomy tend to have low normal serum potassium levels, but are significantly total body potassium depleted. Vigorous resuscitation of the hyperchloremic acidosis with intravenous sodium bicarbonate rapidly lowers serum potassium levels. As serum potassium is already low, acute hypokalemia leading to respiratory arrest can occur.

**214.** The operation for Peyronie's disease most likely to result in penile shortening is:

A) plaque excision, dermal grafting.
B) penile plication.
C) plaque excision, placement of an inflatable prosthesis.
D) plaque excision, placement of a semi- rigid prosthesis.
E) laser plaque destruction, vein patch grafting.

**Correct Answer** **B**

**Explanation** A variety of surgical procedures for correction of Peyronie's disease have evolved. The simplest of these is plication of the tunica albuginea on side opposite the fibrotic plaque. While this can straighten the penis, shortening of the penis is a very real risk. All the other procedures involve destruction and/or removal of plaque followed by reconstruction, and do not shorten the penis.

**215.** Cross-matching prior to kidney transplantation involves the incubation of:

A) donor whole blood with recipient serum.
B) donor lymphocytes with recipient serum.
C) recipient whole blood with donor serum.
D) recipient lymphocytes with donor serum.
E) donor red blood cells with recipient serum.

**Correct Answer** **B**

**Explanation** Cross-matching is the incubation of recipient serum with donor lymphocytes. This is useful to detect preformed anti-donor cytotoxic antibodies in the recipient. A positive T-cell cross-match with a current serum sample from a recipient is a contraindication to kidney transplantation because of the high probability of hyperacute rejection.

**216.** A one- week- old boy with a poor dribbling urinary stream has a distended bladder. A VCUG demonstrates typical posterior urethral valves and ultrasound shows moderately severe hydroureteronephrosis. The urine is clear and the creatinine is 1 mg/dl. The best method of management is:

A) temporary urethral catheter, then valve ablation.
B) bilateral loop ureterostomies.
C) cutaneous vesicostomy.
D) suprapubic cystostomy tube placement.
E) transurethral valve ablation.

**Correct Answer** **E**

**Explanation** This infant is in no acute distress and has a slightly elevated creatinine. The initial management should be as definitive as possible. Avoidance of urinary infection should also be paramount.

**217.** The primary effect of marked chronic diuresis upon the ureter is:

A) no change.
B) aperistalsis.
C) dilation.
D) atrophy.
E) fibrosis.

**Correct Answer** **C**

**Explanation** Diuresis induces ureteral dilation which is the result of elongation and an increase in diameter of the ureter. If prolonged, some hypertrophy of ureteral muscle occurs.

**218.** A 63-year-old woman with a history of transitional cell bladder carcinoma (Grade II, Stage T1) has gross, painless hematuria. IVP shows no abnormality. Voided urinary cytologies are consistent with transitional cell carcinoma, yet cystoscopically there are no visible tumors in the bladder, and random biopsies are negative. The next step should be:

A) flow cytometry of bladder washings.
B) cystoscopy and cytology in three months.
C) ureteral cytology.
D) CT scan of the pelvis.
E) ureteral and bladder cytology.

**Correct Answer** **E**

**Explanation** Transitional cell carcinoma is a disease of the entire urothelium and may involve the upper or lower tracts. With no significant lesion on the IVP, CT scan is unlikely to be of help. Ureteral cytologies alone may miss a source of positive cytology in the bladder, necessitating simultaneous bladder and ureteral cytology. Flow cytometry of the bladder, though possibly more objective than standard cytologies, does not rule out upper tract lesions. Delaying evaluation for three months may allow the tumor to progress.

**219.** A 51-year-old man with a neurogenic bladder has a continent urinary diversion using a detubularized right colon. Three months later, he is asymptomatic but a routine pouchogram shows Grade III/V right ureteral reflux. An IVP is normal. The best next step is:

A) right to left transureteroureterostomy.
B) reimplant the right ureter with a longer tunnel.
C) antibiotic prophylaxis.
D) pouch catheterization every two hours.
E) observation.

**Correct Answer** **E**

**Explanation** Although most continent urinary diversions are performed with a non-refluxing ureteral implant, there is no evidence that reflux is detrimental or progressive with short term follow-up. Unless this patient develops recurrent problems with infection or progressive renal deterioration, observation alone is appropriate.

**220.** A 45- year- old African- American man has a one year history of progressive irritative voiding symptoms and general malaise. Urinalysis shows 15- 20 WBC and 5 RBC/hpf. Urinary cytologies are negative. The serum creatinine is 4.5 mg/dl. Cystoscopy reveals an elongated urethra and inflammatory changes within the bladder. CT scan demonstrates bilateral hydronephrosis and encasement of the bladder, rectum, and both ureters by tissue that has negative Hounsfield units. The next step is:

A) high dose steroid therapy.
B) clean intermittent catheterization.
C) ileal conduit.
D) ureterolysis.
E) bilateral nephrostomy tubes.

**Correct Answer** **E**

**Explanation** This patient's clinical presentation is typical of pelvic lipomatosis and does not require tissue diagnosis. Treatment of the mass with radiotherapy or excision has not generally been successful. While there have been occasional reports of successful treatment with chronic antibacterial suppression, this in general has not been a successful approach. Steroid therapy has no role in pelvic lipomatosis. Supravesical diversion may be indicated as the ultimate treatment of choice in this man but the immediate therapy of his renal insufficiency can be accomplished by temporary nephrostomy drainage.

**221.** The pudendal nerve and artery run along the lateral wall of the ischiorectal fossa in a tunnel formed by splitting of the obturator fascia which is called:

A) the fascia of the ischial tuberosity.
B) the levator fascia.
C) Hunter's canal.
D) Alcock's canal.
E) the sciatic canal.

**Correct Answer** **D**

**Explanation** Alcock's pudendal canal is a fascial tunnel lateral to the levator ani and medial to the obturator internus muscle. Benjamin Alcock (born 1801, Ireland) was the first professor of anatomy at Queen's College, Cork.

**222.** A 40-year-old woman with periorbital xanthelasma develops severe abdominal pain and has a falling hematocrit. Renal arteriography reveals bilateral vascular renal tumors and a site of active hemorrhage from a right lower pole vessel. A CT scan shows negative Hounsfield units within both kidneys. The best management is:

A) angiographic embolization of the lower segmental vessel.
B) percutaneous evacuation of the hematoma.
C) laparotomy, evacuation of hematoma, and right partial nephrectomy.
D) laparotomy, evacuation of hematoma, and right nephrectomy.
E) radical right nephrectomy.

**Correct Answer** **A**

**Explanation** Renal angiomyolipoma is a benign tumor that may occur as an isolated phenomenon or as part of the syndrome associated with tuberous sclerosis. The preferred imaging modality is CT. The presence of fat is characteristic for an angiomyolipoma (negative Hounsfield units). Patients may present with sudden pain or hypotension because of massive hemorrhage within the lesion. Patients with large angiomyolipomas and severe symptoms should undergo immediate selective arterial embolization, if possible, or conservative surgical therapy if embolization is not practical. Angiofarction should be the first attempted therapy in any patient having hemorrhage into any angiomyolipoma.

**223.** A six-year-old boy with nocturnal enuresis has been treated with imipramine. He took an excessive dose last night and is lethargic this morning. The best plan is:

A) observation.
B) cardiac monitoring.
C) Kayexalate enema.
D) hemodialysis.
E) atropine.

**Correct Answer** **B**

**Explanation** Tricyclic antidepressants (TCAs) (e.g. imipramine) can cause toxicity at doses of 10 -20 mg/kg. A 50 mg/kg dose is likely to be fatal. They are absorbed in the small bowel and have anticholinergic actions. Tissue levels, especially in myocardium, are much higher than serum levels. Toxic effects are central and peripheral anticholinergic actions (amine pump blockage that enhances catecholamine actions) as well as myocardial depression. The last is the most problematic, requiring cardiac monitoring. Emetics will be too late in this case, the urgent need is cardiac monitoring. Hemodialysis will take more than an hour to institute and is an incorrect priority. Kayexalate will not help. Atropine is contraindicated. Physostigmine, used in the past, doesn't help with the cardiac effects of TCAs and may cause its own rhythm disturbances.

**224.** A 75-year-old hypertensive woman has abdominal fullness and mild left flank pain. CT scan reveals a 14 cm left renal mass with a 2.5 cm para-aortic lymph node. Percutaneous biopsy of the renal mass reveals leiomyosarcoma. Metastatic evaluation is negative. Optimal therapy is:

A) doxorubicin-based chemotherapy.
B) radical nephrectomy and lymphadenectomy.
C) radical nephrectomy, lymphadenectomy, and external beam radiotherapy.
D) external beam radiotherapy.
E) radical nephrectomy, lymphadenectomy, and adjuvant chemotherapy.

**Correct Answer** **B**

**Explanation** Of all renal sarcomas, leiomyosarcoma is the most common. As with all sarcomas, optimal treatment is excision and, in this case, should include radical nephrectomy as well as removal of the regional lymph nodes. The utility of adjuvant therapy has not been established but usually involves the use of doxorubicin-based chemotherapy. In this elderly patient who is at risk of heart disease, reserving such therapy for local recurrence would be the most reasonable approach.

**225.** During renal transplantation, vascular anastomosis with a Carrel aortic patch that encompasses the donor renal artery(ies) is indicated primarily for:

A) cadaveric kidneys with an atherosclerotic renal artery.
B) cadaveric kidneys from donors < six years old.
C) recipients under five years of age.
D) live donor kidneys with multiple arteries.
E) recipients with severe iliac atherosclerosis.

**Correct Answer** **B**

**Explanation** Anastomosis of a Carrel aortic patch encompassing all donor arteries to the recipient common or external iliac artery is the recommended method of arterial anastomosis for cadaver kidneys from donors less than six years old. Without the use of an aortic cuff there is increased risk for stenosis/thrombosis. An aortic patch should never be taken in a living donor because of the increased risk to the donor. Another indication for the Carrel aortic patch is a cadaveric kidney with multiple arteries.

**226.** The first renal function parameter impaired by ureteral obstruction is:

A) ammonia excretion.
B) bicarbonate excretion.
C) potassium excretion.
D) water reabsorption.
E) chloride reabsorption.

**Correct Answer** **D**

**Explanation** Ureteral obstruction destroys the concentration gradient that causes water reabsorption in the distal tubule. This loss of urinary concentrating ability is the earliest renal manifestation of ureteral obstruction.

**227.** A 72- year- old man with metastatic prostate cancer is treated with leuprolide and flutamide. Two months after beginning treatment, he reports anorexia, nausea, and dark- colored urine. Initial management should be to obtain liver function tests, an ultrasound of the biliary tree, and:

A) liver biopsy.
B) discontinue leuprolide.
C) bone scan.
D) CT scan of upper abdomen.
E) discontinue flutamide.

**Correct Answer** **E**

**Explanation** The association of flutamide and hepatotoxicity, fatal in six reported cases, is well-established. Patients may present with jaundice or merely symptoms of malaise. Laboratory investigations may demonstrate elevated transaminases as well as evidence of cholestatic jaundice. If recognized early and flutamide discontinued, in most cases hepatotoxicity will resolve. In unrecognized cases, hepatic necrosis, hepatic encephalopathy, and death may result.

**228.** During the third trimester of pregnancy, the most common changes in renal function are:

A) elevated BUN; decreased creatinine.
B) elevated BUN; elevated creatinine.
C) decreased BUN; decreased creatinine.
D) decreased BUN; elevated creatinine.
E) unchanged BUN and creatinine.

**Correct Answer** **C**

**Explanation** In pregnancy, glomerular filtration rate increases about 50% as full term approaches. This increase in GFR leads to a decrease in the serum BUN and creatinine. Therefore, the normal values for BUN and creatinine are lower in pregnant women than they are in non-pregnant women.

**229.** A 60- year-old woman has significant stress urinary incontinence. She underwent a transvaginal needle suspension three years ago and became more incontinent after the surgery. Her physical examination and urinalysis are normal. The abdominal leak point pressure is 38 cm H<sub>2</sub>O. A fluoroscopic image shows no evidence of urethral hypermobility. The best therapy is:

A) artificial urinary sphincter.
B) suprapubic bladder suspension.
C) collagen injection.
D) transvaginal bladder suspension.
E) biofeedback therapy.

**Correct Answer** **C**

**Explanation** The abdominal leak pressure study reveals incontinence due to intrinsic sphincter deficiency (ISD). Artificial sphincters are no longer routinely performed in women because of significant morbidity. Suprapubic and vaginal suspensions can correct urethral hypermobility, but are much less likely to cure leakage from ISD. Biofeedback, although useful for detrusor instability and mild stress incontinence, is rarely helpful for intrinsic sphincter deficiency defined by a low abdominal leak point pressure. A pubovaginal sling procedure would also be an appropriate choice in this setting. Collagen use is less invasive and has a reasonable chance for success.

**230.** A 58- year- old man has recurrent left flank pain. A KUB demonstrates a 1 cm stone in the left upper pole calyx and IVP reveals that the calculus is in a partially obstructed caliceal diverticulum that fills with contrast. CT scan shows the caliceal diverticulum to be anteriorly located. There is no history of UTI. The next step is:

A) partial nephrectomy.
B) open marsupialization.
C) ESWL.
D) percutaneous nephrolithotomy.
E) laparoscopic diverticulectomy.

**Correct Answer** **C**

**Explanation** ESWL of a stone in a caliceal diverticulum has yielded clearance rates from 25-75%. More importantly, long-term symptomatic pain relief is often independent of the stone-free rate. Recurrent infection is reported in up to 67% of those patients with a stone in a caliceal diverticulum. Since this patient is uninfected and the diverticulum fills with contrast during IVP, ESWL is an attractive alternative which should provide symptomatic relief in this patient. Although a percutaneous approach has been reported to be an effective modality for treating stones in a caliceal diverticulum, this patient has an anteriorly located diverticulum which would be difficult to access percutaneously.

**231.** Following a nephrectomy for calculous disease, a patient with a normal contralateral kidney has a urine output of 800 ml/day despite receiving 2000 ml I.V. fluids daily. Blood loss at nephrectomy was replaced. The serum sodium is 125 mEq/l and the serum osmolality is 270 mOsm/l. The urinary sodium is 20 mEq/l, the serum potassium is 3.5 mEq/l, and the urine osmolality is 480 mOsm/l. The most likely cause of these findings is:

A) inappropriate ADH secretion.
B) acute tubular necrosis.
C) adrenal insufficiency.
D) dehydration.
E) exogenous water intoxication.

**Correct Answer** **A**

**Explanation** The syndrome of inappropriate ADH secretion (SIADH) may be associated with malignancy, pulmonary and CNS disorders, and certain drugs. Hyponatremia, decreased serum osmolarity (< 285 mosm/l) with inappropriately increased urine osmolarity (> 300 mosm/l), normal adrenal and thyroid function and urine sodium in excess of 20 mEq/l characterize the process. A diagnosis of SIADH can only be made if a patient is euvolemic (as in the present case), as increased ADH secretion is physiologic in hypovolemic states. Adrenal insufficiency would result in increased serum potassium. Dehydration would result in mild hypernatremia and a higher urine osmolarity. There is no reason, in the present case, to consider water intoxication given the administration of only 2000 ml of I.V. fluid daily.

**232.** A CT scan demonstrates a new 4 cm nodule in the left adrenal gland of a 58- year-old man who underwent a right radical nephrectomy for renal cell carcinoma eight years previously. He has mild hypertension that is well- controlled medically and is otherwise healthy. An MRI scan demonstrates the adrenal nodule to be isointense with liver on T2- weighted images. The next best step is:

A) clonidine suppression test.
B) MIBG scan.
C) needle biopsy.
D) adrenalectomy.
E) repeat CT scan in six months.

**Correct Answer** **D**

**Explanation** Many patients with renal cell carcinoma manifest asynchronous metastases which when solitary and resectable are best managed surgically, hence adrenalectomy is the best choice. This approach has been associated with prolonged disease-free survival, especially when the interval between the initial diagnosis and metastasis is greater than one year. Neither the clinical nor radiographic data in this case are suggestive of pheochromocytoma, which would be expected to be hyperintense compared with liver on T2-weighted images. A benign adrenal adenoma is possible, but in view of the history of renal cell carcinoma is a diagnosis of exclusion. Waiting six months to determine if the lesion has change radiographically places the patient at risk for progressive metastatic disease. The malignant potential of adrenal tumors is notoriously difficult to determine on a needle biopsy.

**233.** A 27- year- old HIV positive man has acute left flank pain. Urinalysis reveals microscopic hematuria. Non- contrast helical CT scan demonstrates left hydroureteronephrosis with no evidence of stones. The medication most likely to cause his hydronephrosis is:

A) isoniazid.
B) rifampin.
C) indinavir.
D) trimethoprim-sulfamethoxazole.
E) AZT.

**Correct Answer** **C**

**Explanation** HIV patients have had dramatic clinical improvement with protease inhibitors. These drugs (primarily indinavir) can result in as high as a 6% incidence of urinary calculi. These calculi may not be demonstrated in noncontrast helical CT scan or standard radiographic imaging studies. Management should include hydration, discontinuation of medication for two to three days, and conservative pain management. Most stones will pass spontaneously.

**234.** The medication which results in direct blockade of gonadal androgen synthesis is:

A) ketoconazole.
B) flutamide.
C) finasteride.
D) cyproterone.
E) leuprolide.

**Correct Answer** **A**

**Explanation** Ketoconazole directly blocks both gonadal and adrenal androgen synthesis. It is the most rapid medical means of inducing an anorchid state. Flutamide, a nonsteroidal anti-androgen and cyproterone, a steroidal anti-androgen, both block the receptor for androgens. Finasteride blocks 5-alpha-reductase and leuprolide is a luteinizing hormone-releasing hormone agonist which causes a fall in serum LH-RH levels with the indirect consequence being the blocking of gonadal androgen synthesis.

**235.** In neonates with unilateral renal vein thrombosis, the most common long- term problem is:

A) nephrotic syndrome.
B) hypertension.
C) renal scarring.
D) glomerulonephritis.
E) recurrent renal infection.

**Correct Answer** **B**

**Explanation** Renal vein thrombosis in childhood most often presents with gross hematuria in association with a flank mass, thrombocytopenia, metabolic acidosis, tachypnea, pallor, failure to thrive, proteinuria, and diminished renal function. Bilateral renal vein thrombosis in childhood is uncommon. Conservative (non-surgical, non-interventional) management results in a survival rate approaching 90%. Hypertension, the most common long-term problem encountered after unilateral renal vein thrombosis, may be seen in 15%. Delayed nephrectomy appears the most successful management for hypertension after unilateral renal vein thrombosis.

**236.** During fluoroscopy, the radiation hazard for the urologist is most effectively minimized by placing the x-ray tube:

A) close to and the image intensifier far from the patient.
B) above and the image intensifier below the patient.
C) close to and the image intensifier close to the patient.
D) below and the image intensifier above the patient.
E) far from and the image intensifier close to the patient.

**Correct Answer** **D**

**Explanation** Secondary scatter radiation is produced when a primary x-ray beam passes through a patient's body. This scatter radiation presents the greatest hazard for a urologist. If the x-ray tube is mounted beneath the patient, most of the secondary radiation is absorbed by the patient. If the x-ray tube is mounted above the patient, most of the secondary radiation is aimed at the urologist, especially his face (corneas) and neck (thyroid). The image intensifier will absorb much of the scattered radiation if it is placed close to the patient, but this factor is not as important as x-ray tube location.

**237.** A previously healthy 34- year- old woman is anuric eight hours following a Marshall-Marchetti- Krantz operation for stress urinary incontinence. Her urethral catheter irrigates easily and she does not respond to a fluid challenge. Preoperatively, her serum creatinine was 0.7 mg/dl. The study which will most likely establish the diagnosis is:

A) repeat serum creatinine.

B) urinary sodium concentration and osmolality.

C) VCUG.

D) IVP.

E) isotope renography.

**Correct Answer** **D**

**Explanation** Bilateral ureteral obstruction can occur following a Marshall-Marchetti-Krantz procedure. Sutures can obstruct the intramural ureters bilaterally, particularly when the bladder base is elevated into the wound by an assistant's finger in the vagina. The most likely cause of this patient's anuria is bilateral ureteral obstruction. The study of choice to establish the diagnosis of bilateral ureteral obstruction in this setting is an IVP. Serum creatinine and urinary sodium concentration and osmolality will not help in this diagnosis. Likewise, a VCUG is not warranted. An isotope renal scan is not the study of choice to identify hydroureteronephrosis.

**238.** The form of urinary tract obstruction most likely to be associated with renin-dependent hypertension is:

A) intermittent.
B) acute unilateral.
C) acute bilateral.
D) chronic unilateral.
E) chronic bilateral.

**Correct Answer** **B**

**Explanation** The only form of urinary tract obstruction that may cause renin-mediated hypertension is acute unilateral hydronephrosis. Chronic bilateral hydronephrosis may also cause hypertension but it is volume related and is not associated with hyperreninemia. To establish that hydronephrosis is causing renin-mediated hypertension, divided renal vein renins should show lateralization to the hydronephrotic kidney with suppression of renin output from the normal kidney. A peripheral plasma renin level, even when indexed against the 24-hour urinary sodium, is not a good screening test. Weidmann reported eight patients with unilateral hydronephrosis and renin-mediated hypertension where the peripheral plasma renin levels were normal despite lateralizing renal vein renins. The most common cause of renin-mediated hypertension, renal artery stenosis, should be ruled-out by arteriography.

**239.** A nine- year- old boy is in a motor vehicle accident. He has right flank pain and has voided spontaneously. Urinalysis and vital signs are normal. Physical examination reveals a right flank contusion. Chest x- ray reveals a fracture of the right 12th rib. The next step is:

A) ultrasound.
B) CT scan.
C) observation.
D) IVP.
E) renal scan.

**Correct Answer** **B**

**Explanation** Following blunt trauma, radiographic evaluation of the kidney can be omitted if there is no hematuria and no history of hypotension. However, if there is a rib fracture or abnormalities on physical exam, a renal injury should be suspected. CT scan is the best imaging study to exclude injury.

**240.** Congenital androgen resistance syndromes are usually associated with:

A) reversible infertility.
B) elevated serum testosterone levels.
C) normal serum LH levels.
D) normal serum estradiol levels.
E) low serum FSH levels.

**Correct Answer** **B**

**Explanation** Congenital androgen resistance syndromes are generally associated with infertility and elevated serum testosterone, LH, and FSH levels. The syndromes are also usually associated with elevated serum estradiol levels due to increased secretion by the testes.

**241.** A ten-year-old child was treated with Cytoxan chemotherapy and bone marrow transplantation for leukemia. Severe hematuria requiring transfusion develops. The most likely cause is:

A) leukemic infiltrates in the bladder.
B) bacterial cystitis.
C) graft versus host reaction.
D) acrolein.
E) thrombocytopenia.

**Correct Answer** **D**

**Explanation** Cyclophosphamide is given in large doses in the therapy of acute lymphocytic leukemia and in bone marrow transplantation. A urinary metabolite of cyclophosphamide, acrolein, is believed to be responsible for both hemorrhagic cystitis and bladder cancer. Patients treated with cyclophosphamide have up to a nine-fold increased risk of developing bladder cancer.

**242.** A 24- year- old sexually active homosexual man has a solitary erythematous nodule on the penile shaft. He does not have a urethral discharge. Purulent material is expressed from the nodule and culture on Thayer- Martin medium reveals oxidase positive colonies. The most likely diagnosis is:

A) primary syphilis.
B) gonorrhea.
C) chancroid.
D) lymphogranuloma venereum.
E) Kaposi's sarcoma.

**Correct Answer** **B**

**Explanation** This patient's presentation is lacking in the usual signs and symptoms of gonorrhea, but an oxidase positive culture on Thayer-Martin medium is diagnostic of Neisseria gonorrhea. The lesion and other characteristics are not consistent with syphilis, chancroid, lymphogranuloma venereum, or Kaposi's sarcoma. Cutaneous lesions and accessory glandular infection may be the only manifestations of active gonorrhea.

**243.** A 68-year-old man with Parkinson's disease underwent a TURP two years ago for nocturia, frequency, hesitancy, and urinary incontinence. His symptoms were not alleviated by the prostatectomy and his incontinence worsened. The most informative test would be:

A) videourodynamic study.
B) urethral pressure profilometry with fluoroscopy.
C) residual urine determination.
D) cystoscopy.
E) voiding flow rate and AUA Symptom Score.

**Correct Answer** **A**

**Explanation** Patients with Parkinson's disease most frequently experience urinary tract symptoms, including urinary incontinence, because of uninhibited bladder contractions. The fact that this patient's incontinence worsened following a TURP raises the question as to whether he also has sphincteric incontinence. The best way to evaluate both his bladder and his distal continence mechanism is with a videourodynamic study. Urethral pressure profilometry with fluoroscopy will not determine the status of uninhibited bladder contractions. Symptom score, residual urine determination, cystoscopy, and flow rate do not determine the presence of uninhibited bladder contractions.

**244.** A 64- year- old man with BPH has dysuria, frequency, and hematuria following removal of a urethral catheter after a hip replacement. He is allergic to penicillin. A urine culture taken from the catheter at time of removal grew Enterococcus faecalis. The best treatment is:

A) cephalexin.
B) gentamicin.
C) norfloxacin.
D) clindamycin.
E) nitrofurantoin.

**Correct Answer** **E**

**Explanation** Enterococci are the second most common cause of nosocomial UTIs after E. coli. Most urinary infections with these bacteria are catheter related. Enterococcus faecalis is by far the most common species. Enterococci faecalis is often susceptible to a variety of antibiotics but ampicillin, gentamicin, and vancomycin resistant strains pose major therapeutic problems. Most Enterococci are still sensitive to nitrofurantoin. Catheterized patients should not be treated unless there is evidence of systemic infection. In this patient with a simple, lower urinary tract symptomatic cystitis secondary to catheterization, treatment is indicated.

**245.** The most common etiology for ureteropelvic junction obstruction in childhood is:

A) extrinsic compression.
B) stone disease.
C) polar vessel.
D) congenital dysplastic segment.
E) ureteral valve.

**Correct Answer** **D**

**Explanation** Although extrinsic compression and polar vessels may cause ureteropelvic junction obstruction, the most common etiology by far is a congenital dysplastic segment. It is important to recognize this lesion and excise these segments so that the transmission of peristalsis can occur across the reconstructed ureteropelvic junction.

**246.** Most Americans with clinically detectable uric acid stones have:

A) gout.
B) renal tubular acidosis.
C) disorders of purine metabolism.
D) elevated urinary uric acid levels.
E) normal serum uric acid levels.

**Correct Answer** **E**

**Explanation** The serum uric acid level in patients with uric acid stones is usually normal. Most patients do not have gout; most of the stones are located in the upper tracts. Disorders of purine metabolism have not been identified to account for the formation of most uric acid stones, and the urinary uric acid levels are usually normal. Patients with uric acid stones have acid urine whereas patients with renal tubular acidosis usually have alkaline urine.

**247.** A 56-year-old previously healthy woman develops hypertension that is poorly controlled with multiple-drug antihypertensive therapy. The serum creatinine is 1.3 mg/dl. A technetium DTPA renal scan is done before and sixty minutes after a 50 mg oral dose of captopril. The time-activity curves are depicted below in Figures A (pre-captopril) and B (post-captopril). The next step in her evaluation should be:

A) differential renal vein plasma renin assays.

B) renal duplex ultrasound.

C) I.V.- renal digital subtraction angiogram.

D) renal arteriography.

E) peripheral plasma renin assays pre- and post-captopril.

**Correct Answer** **D**

**Explanation** A kidney with high grade renal artery stenosis exhibits impaired excretory function during converting enzyme inhibition due to interrupted autoregulation of the glomerular filtration rate (GFR). In patients with unilateral renal artery stenosis, there is no associated detectable change in renal function since overall GFR is maintained by the opposite healthy kidney. However, captopril-induced unilateral changes in renal function can be detected by isotope renography which has afforded a new, non-invasive, and relatively accurate screening test for renovascular hypertension. The post-captopril renogram in this patient demonstrates significant impairment in the left renal uptake and excretion of isotope compared to the pre-captopril study. Recent studies have suggested a sensitivity of 80% and a specificity of 90%-100% for this finding in patients with renovascular hypertension due to unilateral stenosis. Therefore, with a positive captopril renogram and a strongly suggestive clinical history, the appropriate next step is renal arteriography which is likely to reveal significant left renal artery stenosis in this patient.

**248.** The best initial treatment of a 45- year- old unmarried man with an AUA Symptom Score of 25 and a peak flow rate of 7 ml/sec is:

A) alpha-blocker.
B) finasteride.
C) transurethral incision of the prostate.
D) transurethral resection of the prostate.
E) laser ablation of the prostate.

**Correct Answer** **A**

**Explanation** The patient has severe urinary symptoms and a markedly reduced peak urinary flow rate. The most likely diagnosis is bladder outlet obstruction secondary to bladder neck hypertrophy or BPH. Since the patient is relatively young and unmarried, the effect of treatment on fertility must be considered. All of the surgical procedures may cause retrograde ejaculation. Finasteride is less effective than terazosin and precautions must be taken for those individuals planning to initiate a pregnancy. The tension of bladder neck and prostate smooth muscle is mediated by alpha-1 adrenoceptors. Alpha-blockers will improve both symptoms and peak flow rate.

**249.** During the performance of a radical retropubic prostatectomy, a well-defined rectal laceration is noted. There is no fecal spillage. No preoperative bowel preparation was administered. This patient should be managed with completion of the prostatectomy and:

A) descending colostomy and Hartmann's pouch.
B) descending colostomy and mucus fistula.
C) primary closure of the laceration.
D) rectal lavage with antibiotic solution and closure.
E) temporary transverse loop colostomy.

**Correct Answer** **C**

**Explanation** Rectal injuries should be encountered very infrequently during radical retropubic prostatectomy, less than .5% in most series. A two layer closure of the rectal wall is sufficient in most cases and digital anal dilation may also be used. If the edges of the rectal wound are devitalized, the patient has received previous pelvic radiation, or there is significant fecal contamination, then a diverting colostomy with Hartmann's pouch should strongly be considered. A mucous fistula is not indicated in the absence of distal obstruction.

**250.** A 38- year- old azoospermic man with secondary infertility has an ejaculate volume of 0.3 ml. Post ejaculate urine contains no sperm. Serum testosterone and FSH are normal, both vasa are palpable, and testicular volume is normal. Transrectal ultrasonography reveals a normal prostate, ejaculatory ducts, and dilated seminal vesicles. The next step is:

A) ejaculatory duct cannulation.
B) testis biopsy.
C) vasography.
D) seminal vesicle aspiration.
E) renal ultrasound.

**Correct Answer** **D**

**Explanation** The differential diagnosis of low ejaculate volume azoospermia is ejaculatory duct obstruction, hypogonadism, vasal agenesis, ejaculatory failure, and testicular failure. Hypogonadism was excluded by a normal testosterone level and the patient has palpable vasa. Retrograde ejaculation is not present because no sperm are in the post-ejaculate urine. This patient has either testicular failure or an obstruction of the ejaculatory ducts. Seminal vesicle aspiration under transrectal ultrasound guidance will reveal numerous sperm if obstruction is present and is the least invasive method to diagnose this treatable lesion.

**251.** An 82- year- old woman who lives in a nursing home complains of urinary urgency and incontinence. Neurologic examination is normal. Urinalysis is normal. Residual urine is 140 ml after voiding 160 ml. The most likely etiology of her symptoms is:

A) detrusor instability.
B) detrusor-sphincter dyssynergia.
C) decreased detrusor compliance.
D) detrusor instability with impaired contractility.
E) intrinsic sphincter deficiency.

**Correct Answer** **D**

**Explanation** Detrusor hyperactivity with impaired contractility is the most common cause of urinary incontinence in the frail elderly and presents as urge incontinence or unspecified incontinence with large postvoid residual urine. Detrusor-sphincter dyssynergia is only seen in patients with neurologic disorders.

**252.** A 53- year- old woman underwent continent cutaneous urinary diversion six months ago. She is asymptomatic, performs clean intermittent catheterization every four hours, and obtains about 200 ml with each catheterization. A routine urine culture reveals 10<sup>5</sup> cfu/ml of E. coli. The best treatment is:

A) culture-specific antibiotics for ten days.
B) urine acidification.
C) increase frequency of catheterization .
D) observation.
E) chronic antibiotic suppression.

**Correct Answer** **D**

**Explanation** Bacterial colonization of urinary reservoirs is common with 17/18 patients demonstrating >10<sup>5</sup> col/ml in one series. Because colonization frequently disappears spontaneously, no treatment is warranted. More frequent catheterization would be indicated if reservoir pressures and volumes were higher at the time of catheterization.

**253.** An 11-year-old boy has an impalpable left testis. The finding which proves left testicular absence is:

A) a blind-ending vas deferens.
B) hypertrophy of the right testis.
C) absence of the left kidney.
D) XY/XO karyotype.
E) blind-ending spermatic vessels.

**Correct Answer** **E**

**Explanation** Blind-ending spermatic vessels are the sine qua non of testicular absence, and exploration must be continued until they have been observed. A blind-ending vas may simply reflect non-union with a distant testis. Non-operative criteria are currently unable to prove monorchia.

**254.** Severe hypercalcemia in a patient with acute or chronic renal failure is best treated with:

A) saline diuresis.
B) inorganic phosphate.
C) calcitonin.
D) dialysis.
E) steroids.

**Correct Answer** **D**

**Explanation** While hypercalcemia is rare in acute or chronic renal failure, it can occur. This usually happens when patients with chronic renal failure develop massive parathyroid hypertrophy or are treated with calcium carbonate preparations to limit phosphate resorption from the gut because of the limited ability of the kidney to excrete calcium. Hypercalcemia in advanced renal failure responds best to dialysis. Calcitonin is contraindicated, as is saline diuresis. Phosphate will be poorly tolerated and steroids will not work in this setting.

**255.** In a 28- year- old woman with interstitial cystitis, sodium pentosan polysulfate (Elmiron) will:

A) decrease urinary frequency.
B) decrease dysuria.
C) decrease nocturia.
D) increase compliance.
E) increase voided volume.

**Correct Answer** **E**

**Explanation** A randomized double blind placebo controlled trial demonstrated that the only objective parameter influenced by Elmiron was an increase in voided volume. The increase in voided volume was only 20 ml.

**256.** A 52-year-old man has a partial penectomy for a poorly-differentiated squamous cell carcinoma of the penis invasive into the corpora cavernosa. A 2 cm inguinal lymph node is palpable in the right groin, and inguinal lymph node dissection is planned. The best way to decrease the postoperative complication of chronic leg edema in this patient is:

A) preservation of the saphenous vein.
B) division of the inguinal ligament during dissection.
C) transposition of the sartorius muscle over the vessels after dissection.
D) limiting the dissection to superficial to Scarpa's fascia.
E) maintaining the plane of dissection anterior to the femoral vessels.

**Correct Answer** **E**

**Explanation** One of the most debilitating potential long-term complications of inguinal lymph node dissection is lower extremity edema. Edema is partially preventable by adherence to good operative technique. Preservation of the saphenous vein may not be a major influencing factor but ligation at the femoral triangle does not decrease edema. The operation can be performed without division of the inguinal ligament in most patients. Transposition of the sartorius muscle may help cover the bare surface of the femoral vessels but does not affect edema. The dissection should proceed inferior to Scarpa's fascia to decrease the incidence of flap necrosis. Dissection lateral and behind the femoral vessels should be avoided because of the presence of large lymphatic channels in this area.

**257.** During implantation of an artificial urinary sphincter in a man, the most common intraoperative injury is to the:

A) urethra during dissection of the bulbo-spongiosus.
B) urethra at the attachment to the corporal bodies.
C) bladder during reservoir placement.
D) femoral vessels during tube routing.
E) spermatic cord during pump placement.

**Correct Answer** **B**

**Explanation** Urethral injury is the most common untoward event during placement of an artificial sphincter. The most difficult point in the dissection and the most frequent site of injury is where the urethra is attached to the septum of the corporal bodies at the 12 o'clock position.

**258.** In patients with posterior urethral valves, renal dysplasia is most commonly associated with:

A) vesicoureteral reflux.
B) hydronephrosis.
C) renal duplication.
D) ureteral dilation.
E) urinary ascites.

**Correct Answer** **A**

**Explanation** Vesicoureteral reflux and renal dysplasia often co-exist in patients with posterior urethral valves, especially in cases with unilateral reflux into a nonfunctioning kidney. This association most commonly affects the left kidney where a defect in ureteral bud embryogenesis is thought to be a significant etiological factor.

**259.** Three hours after being hit in the perineum, an 11- year- old boy has a swollen, ecchymotic scrotum. He has a normal urinalysis. The best next step is:

A) scrotal exploration.
B) isotope testicular scan.
C) scrotal ultrasound.
D) retrograde urethrogram.
E) scrotal elevation, ice, and bedrest.

**Correct Answer** **C**

**Explanation** A scrotal ultrasound will be the most helpful of the above studies to determine the presence of hematocele and if the tunica albuginea of the testicles is intact. These findings will direct further management.

**260.** A 28-year-old man undergoes orchiectomy for anaplastic seminoma. Abdominal CT scan and chest x-ray are normal. Beta- hCG falls from 500 to 12 mIU/ml (normal < 2 mIU/ml) and AFP falls from 300 to 225 ng/ml (normal < 25 ng/ml) ten days post-orchiectomy. The next step is:

A) repeat tumor markers in two weeks.
B) retroperitoneal lymphadenectomy.
C) cisplatinum-based chemotherapy.
D) ultrasound of contralateral testis.
E) radiation therapy.

**Correct Answer** **C**

**Explanation** Seminoma does not produce alpha-fetoprotein and thus this patient must be managed as a nonseminomatous germ cell tumor (NSGCT). A very valuable prognostic tool in the staging of clinically Stage I (TxN0M0) NSGCT is the rate of decline of serum tumor markers (AFP and beta-hCG). The half-life of beta-hCG is 18-36 hours and it is five to seven days for AFP. If tumor markers do not decline at an appropriate rate as in this case, the suspicion of residual disease must be high. While persistently elevated beta-hCG can be unrelated to residual disease, persistent elevations of AFP almost always portend residual disease. In this circumstance, optimal therapy is cis-platinum-based chemotherapy as almost all patients treated with retroperitoneal lymphadenectomy will relapse.

**261.** A 24-year-old woman has formed five ammonium acid urate stones. The test which will best elucidate the underlying cause of her recurrent stone disease is:

A) ammonium chloride load.
B) thiazide challenge.
C) urinary phenolphthalein.
D) arterial blood gas.
E) nitroprusside test.

**Correct Answer** **C**

**Explanation** Ammonium acid urate stones are often seen in patients with significant metabolic acidosis. A common cause of acidosis in young women is chronic laxative abuse which will cause gastrointestinal loss of fluid and electrolytes with subsequent intracellular acidosis. Laxative abuse should be suspected whenever a young woman has ammonium urate renal calculi with non-infected urine. Phenolphthalein is a urinary marker for laxative abuse.

**262.** The most useful procedure to correct a recurrent 2-1/2 cm stricture of an intrarenal ureteropelvic junction following a previously unsuccessful pyeloplasty is:

A) dismembered pyeloplasty.
B) ureterocalycostomy.
C) Foley Y-V plasty.
D) Davis intubated ureterotomy.
E) spiral flap pyeloplasty.

**Correct Answer** **B**

**Explanation** Recurrent ureteropelvic junction obstruction is usually associated with a significant amount of periureteral and peripelvic fibrosis. When the pelvis is also intrarenal and there is an associated stricture of the upper ureter, dismembered or flap pyeloplasty will not provide a good repair. A Davis intubated ureterotomy is a possibility, but it is not a highly reliable procedure. Ureterocalycostomy is the best choice. It is important to resect renal cortex adjacent to the calyx before performing the ureterocalycostomy.

**263.** Patients on chronic hemodialysis may have a tendency to bleed excessively during surgery. This is due to:

A) thrombocytopenia.
B) inadequate levels of Vitamin K.
C) hypofibrinogenemia.
D) thromboplastin deficiency.
E) a qualitative platelet defect.

**Correct Answer** **E**

**Explanation** In patients with chronic renal failure, blood clotting is abnormal because of platelet dysfunction resulting from a deficiency of von Willebrand factor multimers and the presence of small molecules that impair platelet function. Because of the qualitative platelet defect, the most sensitive test to predict the occurrence of bleeding is the determination of a bleeding time.

**264.** Which is best suited to the Wallace (conjoined) type of uretero- intestinal anastomosis for urinary diversion:

A) colon conduits.
B) revision of ureteroileal anastomosis.
C) dilated ureters.
D) history of bladder CIS.
E) prior radiation therapy.

**Correct Answer** **C**

**Explanation** The utility of the Wallace technique is most apparent in cases of dilated ureters requiring larger areas of the ileal segment for individual anastomosis. The Wallace anastomosis has the lowest complication rate of any of the ureterointestinal anastomotic techniques. Stricture formation is approximately 3%, deterioration of the upper tracts is 4%, and leakage is 2%. The Wallace technique is not recommended for patients with carcinoma in situ or who have a high likelihood of recurrent tumor in the ureter.

**265.** A 58-year-old insulin- dependent diabetic man with a history of two superficial transitional cell carcinomas (TCC) of the bladder treated by TURBT has gross hematuria. The serum creatinine level is 1.7 mg/dl. At cystoscopy, the bladder appears normal except for blood coming from the right ureteral orifice. An IVP reveals prompt bilateral renal function and a radiolucent filling defect in the lower third of the right ureter. Ureteroscopy confirms the presence of a tumor, and biopsy reveals Grade 3 TCC. The preferred management is:

A) ureteral stent and intravesical chemotherapy.

B) ureteroscopic tumor resection.

C) distal ureterectomy and reimplant.

D) segmental ureterectomy and transureteroureterostomy.

E) right nephroureterectomy.

**Correct Answer** **C**

**Explanation** Distal ureteral tumors should be treated by distal ureterectomy and ureteroneocystostomy assuming no evidence of multifocality. Transureteroureterostomy is not recommended with urothelial malignancy. Endourological techniques are indicated only for lower grade tumors. Nephroureterectomy, although reducing the risk of ipsilateral superficial recurrence, yields no survival advantage over distal ureterectomy and would reduce renal reserve in a patient with diabetes and renal insufficiency.

**266.** A 50- year- old man who underwent radical cystoprostatectomy and orthoptic bladder reconstruction five years ago develops congestive heart failure. The best treatment for his persistent hyperchloremic metabolic acidosis is:

A) furosemide.
B) Bicitra.
C) sodium bicarbonate.
D) chlorpromazine.
E) Polycitra.

**Correct Answer** **D**

**Explanation** The treatment of hyperchloremic metabolic acidosis requires administration of alkalizing agents or blockers of chloride transport. In patients in whom excessive sodium loads are undesirable, nicotinic acid or chlorpromazine may be administered to control the acidosis. Nicotinic acid and chlorpromazine inhibit cyclic AMP and thereby impede chloride transport.

**267.** A 28- year- old man with primary infertility has a microdeletion of the DAZ region of the Y chromosome (AZFc). One semen analysis reveals azoospermia. His wife is scheduled for in vitro fertilization. Prior to testicular sperm extraction, he should have:

A) serum dihydrotestosterone level.
B) repeat semen analysis with centrifugation.
C) renal ultrasound.
D) X chromosome analysis.
E) transrectal ultrasound.

**Correct Answer** **B**

**Explanation** Y chromosome microdeletions are common in severe male infertility. Although many men with AZFc deletions are azoospermic, occasional sperm are often found in the ejaculate and may obviate the need for testicular sperm extraction. Renal, prostatic and X chromosome abnormalities are rarely found in association with Y microdeletions.

**268.** A 32- year- old man has pulsatile retroperitoneal bleeding immediately after Veress needle insufflation and trocar placement in the infraumbilical region for a laparoscopic procedure. The vessel most likely injured is the:

A) umbilical artery.
B) epigastric artery.
C) left iliac vein.
D) right iliac artery.
E) sacral artery.

**Correct Answer** **D**

**Explanation** Vascular complications of laparoscopy are relatively uncommon but can be life-threatening. Complications most commonly occur during Veress needle or peri-umbilical trocar placement. They are likely to affect either the right iliac artery, left iliac vein or inferior vena cava because of their location under the umbilicus. Pulsatile bleeding suggests an arterial source.

**269.** A 28- year- old man develops a persistent painless erection two weeks following a bicycle accident. Physical examination demonstrates perineal ecchymosis. Aspiration of corporal blood reveals $pO_2$ = 85 mm Hg, $pCO_2$ = 40 mm Hg, pH = 7.41. The best management is:

A) oral terbutaline.
B) intracavernous phenylephrine.
C) cavernosal-glanular shunt.
D) selective arterial embolization.
E) cavernosal-spongiosum shunt.

**Correct Answer** **D**

**Explanation** Priapism that follows blunt perineal trauma is usually high flow or non-ischemic. This is caused by arterial rupture directly into cavernous tissues. The presentation is usually delayed from the initial event. Aspiration of corporal blood demonstrates satisfactory oxygenation. Venous channels may partly compensate for high flow and there is usually no pain associated with this condition. This can be corrected with selective embolization of the offending arterial branch. Most patients regain adequate erection after embolization, but this may take up to several months. In a small percentage of patients, the erection may resolve spontaneously.

**270.** A 65- year- old woman has left flank pain and gross hematuria. CT scans demonstrate a 1.5 cm pulmonary nodule, a 7 cm enhancing solid left renal mass, and normal right kidney. There is no other clinical or radiograph evidence of metastasis. The best management is:

A) systemic immunotherapy.
B) combination immunotherapy and chemotherapy.
C) nephrectomy and systemic immunotherapy.
D) renal angioinfarction and systemic immunotherapy.
E) nephrectomy and pulmonary resection.

**Correct Answer** **E**

**Explanation** Surgical excision is the treatment of choice for patients with renal cell carcinoma and a solitary metastasis, producing five year disease-free survivals of 35%. Systemic therapy alone (immunotherapy with or without chemotherapy) produces complete responses in only up to 15% of patients, and responses in the primary tumor are rare. Angioinfarction may be a useful surgical adjunct in large tumors, those which extend into the renal hilum, those associated with vena caval thrombi, or for palliation of pain or bleeding, but is not a good form of local control from the cancer standpoint.

**271.** A 59-year-old woman has acute pyelonephritis. Her WBC is 18,000, serum creatinine is 1.2 mg/dl and urine culture shows > 100,000 colonies/cc of Enterococcus faecalis. Pending sensitivities, antibiotic treatment should be:

A) ciprofloxacin 500 mg p.o. b.i.d.
B) amoxicillin 2 gm p.o. t.i.d.
C) ampicillin 1 gm i.v. q 4 hours and gentamicin 350 mg i.v. q day.
D) ceftazidime 1 gm i.v. q 8 hours.
E) ampicillin 1 gm i.v. q 4 hours and gentamicin 80 mg i.v. q 8 hours.

**Correct Answer** **C**

**Explanation** Treatment of Enterococcus infections should involve two synergistically active agents, typically a penicillin derivative and an aminoglycoside. Single daily dosing of aminoglycosides (at a dose of 5 mg/kg/day for gentamicin) provides optimum concentration- dependent bactericidal activity, longer dosing intervals due to post-antibiotic effect, and prevention of bacterial adaptive resistance. With longer dosage intervals, toxicity may also be delayed or reduced.

**272.** The most important contraindication to orthophosphate therapy in patients with recurrent renal lithiasis is:

A) diarrhea.
B) osteodystrophy.
C) immature bone development.
D) hypercalciuria.
E) urea-splitting urinary infection.

**Correct Answer** **E**

**Explanation** Orthophosphate therapy is contraindicated in patients with nephrolithiasis complicated by UTI and in those individuals with renal insufficiency. This could accelerate struvite stone formation and be dangerous for patients with renal insufficiency who may have increased serum phosphate levels.

**273.** Metabolic alkalosis is most frequently associated with:

A) hyperventilation.
B) chronic obstructive pulmonary disease.
C) hyperkalemia.
D) hypokalemia.
E) hypocarbia.

**Correct Answer** **D**

**Explanation** When metabolic alkalosis occurs the body's response is increased pCO<sub>2</sub> and pH. Hypoventilation occurs thus increasing pCO<sub>2</sub>. Metabolic alkalosis often is associated with volume reduction which stimulates the renin-angiotensin-aldosterone system which promotes K+ excretion. Metabolic alkalosis is seldom due to COPD.

**274.** A 28-year-old man undergoes a right radical orchiectomy for pure seminoma. The serum AFP and hCG are normal, and an abdominal CT scan reveals a 4 cm mass in the interaortocaval region. Tomograms of the chest reveal three nodules at the base of the right lung. The best management is:

A) needle biopsy of pulmonary nodule.
B) radiation to the retroperitoneum and chest.
C) retroperitoneal lymphadenectomy followed by platinum-based chemotherapy.
D) retroperitoneal lymphadenectomy followed by chest radiotherapy.
E) platinum-based chemotherapy.

**Correct Answer** **E**

**Explanation** Patients with Stage III seminomatous tumor should receive chemotherapy with cis-platinum containing combinations. Radiation therapy should not be utilized as the initial treatment in patients with Stage III seminomas, as the radiation therapy may diminish bone marrow reserves and preclude effective chemotherapy. The options of radiation therapy or resection remain open for residual masses following combination chemotherapy.

**275.** Following the removal of a frontal lobe meningioma, detrusor function will most likely be:

A) coordinated with urgency incontinence.
B) coordinated but incomplete with increased residual volume.
C) uncoordinated due to detrusor-sphincter dyssynergia.
D) uncoordinated due to detrusor areflexia.
E) uncoordinated due to primary bladder neck dyssynergia.

**Correct Answer** **A**

**Explanation** Areas above the brainstem are generally inhibitory in function relative to detrusor function. Injuries as a result of trauma or surgery to areas above the brainstem usually result in precipitous, complete voiding related to detrusor hyperreflexia with sphincteric coordination facilitated by an intact brainstem.

**276.** Five days after intercourse, a 40- year- old man develops a painful necrotic penile ulcer and painful inguinal lymphadenopathy. Gram stain of an exudate from the lesion reveals gram-negative coccobacillus. Dark-field examination and Tzanck smears are negative. The treatment of choice is:

A) penicillin.
B) tetracycline.
C) acyclovir.
D) erythromycin.
E) sulfisoxazole.

**Correct Answer** **D**

**Explanation** This patient has chancroid. The drug of choice is erythromycin 500 mg p.o. q.i.d. for seven days or ceftriaxone 250 mg I.M. once. The other antibiotics will not be effective to eliminate the organism which is haemophilus ducreyi. Acyclovir is effective against the herpes virus.

**277.** A 35-year-old man has persistent retroperitoneal lymphadenopathy after cis-platinum-based chemotherapy for nonseminomatous germ cell tumor. The parameter most predictive of finding only fibrosis in the retroperitoneum is:

A) normalization of serum hCG.
B) 50% reduction in size of the mass on CT scan.
C) pure embryonal cell carcinoma in the primary tumor.
D) normalization of serum alpha-fetoprotein.
E) teratoma in the primary tumor.

**Correct Answer** **C**

**Explanation** Patients with a nonseminomatous germ cell tumor who have a greater than 90% reduction in the size of the retroperitoneal mass with chemotherapy and have no teratomatous elements in their tumor are almost never found to have either viable cancer or teratoma in the residual mass at the time of retroperitoneal lymph node resection. Normalization of the serum markers does not predict for the presence of fibrosis.

**278.** The validity of a creatinine clearance test can best be determined by simultaneously measuring or calculating the:

A) total creatinine excreted.
B) total sodium excreted.
C) total urea excreted.
D) total urine volume excreted.
E) average urine osmolality.

**Correct Answer** **A**

**Explanation** The total amount of creatinine excreted each 24 hours is dependent upon muscle mass and is generally constant. An incomplete collection is suggested by an incorrect amount of total creatinine in a 24-hour specimen; the normal production of creatinine is 1.0 mg/kg/hr.

**279.** The structure found immediately lateral to the femoral artery as it passes posterior to the inguinal ligament is the:

A) sartorius muscle.
B) femoral vein.
C) femoral nerve.
D) iliohypogastric nerve.
E) lateral femoral cutaneous nerve.

**Correct Answer** **C**

**Explanation** The anatomy of the femoral canal from lateral to medial is the femoral nerve, the femoral artery, the femoral vein and lymphatic channels. This is important when blood draws from the femoral vein or artery are considered. Dissection in the area of the femoral canal should also consider the saphenous vein junction with the femoral vein just inferior to the inguinal ligament.

**280.** A 34- year- old HIV positive man has fever, dysuria, and diarrhea. Physical examination reveals a tender prostate; the urine culture is negative. Transrectal ultrasonography demonstrates multiple hypoechoic lesions confined to the posterior prostate gland. The next step is administration of broad spectrum I.V. antibiotics and:

A) insertion of suprapubic tube.
B) insertion of urethral catheter.
C) needle aspiration of the prostate for culture.
D) transurethral unroofing of abscess.
E) transrectal drainage of abscess.

**Correct Answer** **D**

**Explanation** The incidence of prostatic abscess has declined but it is still seen in immunodeficient patients such as those with immunodeficiency virus (HIV). Transrectal ultrasonography is now the imaging modality of choice for the evaluation of patients with suspected prostatic abscess. Antibiotic therapy alone will not be sufficient if an abscess is found. Suprapubic urinary diversion is appropriate in patients with acute bacterial prostatitis without an abscess. Transurethral unroofing is the treatment of choice in patients with an abscess confined to the prostate gland while open drainage is required for patients with more extensive lesions.

**281.** A seven-year-old boy who has had three prior hypospadias repairs develops a small mid-shaft urethrocutaneous fistula. A fistula repair is performed without urinary diversion. On the fifth day, the fistula reopens and persists despite three weeks of urethral catheter drainage. The best treatment is:

A) immediate surgical reclosure of the fistula.
B) placement of a suprapubic tube.
C) bury penis in scrotum.
D) replace the urethral catheter for another 3-4 weeks.
E) delay surgical repair for at least six months.

**Correct Answer** **E**

**Explanation** In a boy who has had three hypospadias repairs with the probability of marked fibrosis, options 'a' through 'd' would not be acceptable and would certainly lead to the continuation of the urethrocutaneous fistula. Immediate surgical reclosure of the fistula is to be condemned, particularly one month post-surgery when there is maximum edema and poor tissue tensile strength. A waiting period of at least six months or perhaps longer is prudent to allow for neovascularity, subsidence of edema, and the best chance at reclosure. In all urethrocutaneous fistulas that do not close, distal obstruction must be ruled out as well as the presence of a distal urethral diverticulum acting as an obstruction.

**282.** The presence of nephrogenic rests (nodular renal blastema) may predispose to:

A) adenocarcinoma.
B) sarcoma.
C) adenoma.
D) hamartoma.
E) Wilms' tumor.

**Correct Answer** **E**

**Explanation** Lesions apparently representing Wilms' tumor precursors have been recognized for many years. They have been found in 1% of kidneys in infants on postmortem and in 30-40% of kidneys removed for Wilms' tumor. The terminology for these lesions has evolved over the years. These lesions were previously termed persistent nodular renal blastema, Wilms' tumorlet or nephroblastomatosis if there were diffuse lesions. The current preferred term is nephrogenic rest which is defined as foci of abnormally persistent nephrogenic cells that can form a Wilms' tumor. Beckwith has estimated that approximately 1 in 80 nephrogenic rests will develop into Wilms' tumor.

**283.** A 24- year- old sexually active, asymptomatic woman on oral contraceptives has a long history of foul smelling urine. Her urine pH is 8.0. The most likely diagnosis is:

A) asymptomatic bacteriuria with urease producing organism.
B) trichomonal vaginitis.
C) progestational effect of birth control pill.
D) excessive dietary red meat.
E) vegetarian diet.

**Correct Answer** **E**

**Explanation** The urologist is very often presented with an asymptomatic patient who complains only of foul smelling urine. A foul odor is suggestive of infection but may be caused by vaginitis (in which case the urine actually does not have foul odor) or consumption of food such as asparagus. The specific gravity is not helpful. An alkaline pH over 8.0 is suggestive of a urease producing micro-organism such as Proteus or Providentia (which would be very unlikely in an asymptomatic 24-year-old patient) or may also be caused by a vegetarian diet. Many people have recently switched their diet and now subsist on a virtually totally vegetarian diet and tend to have an alkaline urine. This fact is very helpful to urologists in helping to explain a concern over a patient's urine odor. The hydrogen ion content of the urine is caused principally by sulfur containing amino acids in animal proteins. The cause of the odor is unknown.

**284.** A 13-year-old boy with progressive onset of left testicular pain for six hours and nausea should:

A) be observed for four hours to assess symptom progression.
B) undergo scrotal exploration.
C) be given anti-inflammatory medication and rest.
D) be given antibiotic treatment.
E) undergo inguinal cord block and testicular detorsion.

**Correct Answer** **B**

**Explanation** This boy's age, and the presence of nausea, are indications of the high likelihood of testicular torsion as a cause of his symptoms. Surgical exploration is both diagnostic and therapeutic. Observation, even for a short time, is not appropriate and provides little benefit in terms of allowing better clinical separation of causes of his symptoms. In this setting the diagnosis of torsion of one of the appendages should only be made operatively. There is no evidence to support the diagnosis of this being of an infectious etiology. Testicular detorsion risks incomplete therapy and a false sense of improvement due to the cord block.

**285.** Calcium oxalate calculi appear on MRI scan as:

A) high intensity T1 weighted image.
B) low intensity T2 weighted image.
C) low core intensity image.
D) poorly visualized image.
E) bright bone-like signal image.

**Correct Answer** **D**

**Explanation** Non-contrast CT images can identify all calcium oxalate calculi as bright intensity signals similar to bone. Additionally, uric acid and matrix calculi that are frequently radiolucent on scout radiographs easily image with CT. MRI scans are unable to reliably identify calcium oxalate or other stone types.

**286.** The principal mechanism for urinary excretion of an increased acid load in chronic acidosis is:

A) reabsorption of filtered HCO<sub>3</sub>.
B) increased sodium reabsorption in the collecting duct.
C) increased aldosterone secretion.
D) increased formation of ammonia.
E) stimulation of collecting duct carbonic anhydrase.

**Correct Answer** **D**

**Explanation** An adaptive increase in collecting tubule cell ammonia formation is the principal mechanism for the excretion of increased acid loads in chronic acidosis. Although enhanced sodium reabsorption and aldosterone may increase hydrogen ion secretion in the collecting duct, buffer availability (e.g., ammonia) is still the limiting factor. The majority of filtered bicarbonate is reabsorbed in the proximal tubule under normal circumstances, with little capability for increased reabsorption with increased acid load. The collecting duct epithelium does not contain carbonic anhydrase.

**287.** The antimicrobial agent which can be used at the usual dosage in an azotemic patient is:

A) nitrofurantoin.
B) sulfisoxazole.
C) doxycycline.
D) trimethoprim.
E) diflucan.

**Correct Answer** **C**

**Explanation** All the antibiotics listed including most tetracycline's, except doxycycline, are excreted primarily in the urine and their blood levels increase in the presence of renal insufficiency. Doxycycline is excreted mainly in the feces and does not require consideration for a dosage reduction in an azotemic patient.

**288.** A 36-year-old woman undergoes partial nephrectomy with placement of an internal ureteral stent. Postoperative KUB demonstrates proper stent position. One week following surgery, urine draining from the flank increases from 50 to 1100 cc/day and remains 800 cc/day for the next three days. The next step is:

A) placement of urethral catheter.
B) surgical exploration.
C) observation.
D) remove ureteral stent.
E) placement of percutaneous nephrostomy.

**Correct Answer** **A**

**Explanation** The above situation describes a urine leak following a partial nephrectomy which may occur in up to 17% of patients. An internal ureteral stent was placed and KUB confirmed the appropriate placement of the stent following surgery. In this situation, the ongoing significant urine leak may be due to obstruction of the stent or to reflux of urine from the bladder. Thus, placing a urethral catheter should be the first step. If the urinary leakage does not decrease, then stent removal and replacement are appropriate. Placement of a percutaneous nephrostomy tube should be avoided unless there is obstruction and a new stent cannot be passed from below. Surgical exploration is not warranted unless all other efforts are unsuccessful.

**289.** Proliferation of the prostate in vitro is inhibited by:

A) transforming growth factor-beta.
B) keratinocyte growth factor.
C) basic fibroblast growth factor.
D) epidermal growth factor.
E) insulin growth factor.

**Correct Answer** **A**

**Explanation** All of the growth factors except transforming growth factor-beta act as prostatic mitogens in vitro.

**290.** A 25-year-old man has a fractured pelvis. After an infusion of 2500 ml of Ringer's lactate, his blood pressure is 70/40 mm Hg and his urinary output is 20 ml/hour. Two units of type specific blood are given over 45 minutes. The blood pressure increases to 85/50 mm Hg, and the CVP increases from 3 to 6 cm H<sub>2</sub>O. He should be given an infusion of:

A) Ringer's lactate.
B) fresh frozen plasma.
C) 0.5 normal saline.
D) more blood.
E) sodium bicarbonate.

**Correct Answer** **D**

**Explanation** If more than 2500-3000 ml of fluid are needed for resuscitation, blood and blood products will be required. Continued hypotension and a CVP less than < 6 cm H<sub>2</sub>O are most consistent with hypovolemic shock. The most appropriate therapy is the infusion of more blood. Fresh frozen plasma will have to be administered soon because of dilutional coagulopathy which often occurs after massive transfusions. If over 10 units of blood are administered, platelet packs may be necessary. Sodium bicarbonate infusion will correct metabolic acidosis, but this patient's primary problem remains hypovolemic shock.

**291.** Pretransplant bilateral nephrectomy is most commonly necessary for:

A) glomerulonephritis.
B) polycystic kidney disease.
C) medullary sponge kidney.
D) diabetes.
E) recurrent pyelonephritis.

**Correct Answer** **E**

**Explanation** Of the conditions listed, the only solid indication for pretransplant nephrectomy is the patient with a well-documented history of pyelonephritis. Pretreatment bilateral nephrectomy is most important in those patients with active infection. The hazards of active infection and immunosuppression certainly justify the risk. There is no indication for nephrectomy in the patient with glomerulonephritis. Patients with polycystic disease do not require bilateral nephrectomy prior to transplantation unless the kidneys are infected, contain abscesses or are too large. Cases of diabetes and medullary cystic disease not associated with UTI need not have pretransplant nephrectomy.

**292.** A 30- year- old man involved in an automobile accident sustains fracture dislocations of vertebral bodies T- 12, L- 1, and L- 2. One year after the injury, the most likely sequela is:

A) detrusor-sphincter dyssynergia.
B) autonomic dysreflexia.
C) retrograde ejaculation.
D) detrusor areflexia.
E) lack of seminal fluid emission.

**Correct Answer** **D**

**Explanation** The sacral (S-2 to S-4) spinal cord parasympathetic cell bodies are anatomically located at the level of vertebrae T-12, L-1 and L-2. A spinal cord injury at this level would be expected to injure the parasympathetic outflow to the bladder and the correct answer is, therefore, detrusor areflexia. Lesions above the level of the sacral spinal cord can be associated with detrusor-sphincter dyssynergia. In order for autonomic dysreflexia to occur the lesion must be above the sympathetic outflow tract which is much higher than the injury sustained by this patient. The sympathetic innervation is not affected by this lesion and, therefore, retrograde ejaculation does not occur. However, many of these patients are anejaculatory due to interruption of afferent nerve supply.

**293.** A child with renal insufficiency, acidosis, and a small, noncompliant bladder requires bladder augmentation. The most physiologically acceptable gastrointestinal segment to use is:

A) stomach.
B) jejunum.
C) ileum.
D) cecum.
E) sigmoid.

**Correct Answer** **A**

**Explanation** Renal insufficiency and acidosis are relative contraindications to the use of small or large bowel segments for bladder augmentation because these segments absorb urinary electrolytes. Gastric mucosa, on the other hand, actually secretes chloride and functions as a barrier to its absorption and to the absorption of ammonium as well. After gastrocystoplasty, serum chloride levels are shown to decrease and CO<sub>2</sub> levels increase in patients with renal insufficiency. In this subgroup of patients requiring bladder augmentation, stomach appears to be the most appropriate intestinal segment.

**294.** In a prepubertal male with bilateral intra-abdominal testes the most probable response to exogenous hCG (human chorionic gonadotrophin) would be:

A) increase in serum testosterone.
B) decrease in serum testosterone.
C) no change in serum testosterone.
D) bilateral testicular descent.
E) unilateral testicular descent.

**Correct Answer** **A**

**Explanation** Administration of hCG to a prepubertal male with bilateral intra-abdominal undescended testes would not likely result in descent of either testis. It would be expected to stimulate increased testosterone production by intra-abdominal testes. In the presence of a normal male phenotype and karyotype and an elevated serum FSH, the failure in rise of serum testosterone in response to hCG would imply anorchism and would obviate the need for abdominal exploration.

**295.** A 30-year-old woman with slowly progressive multiple sclerosis has urinary frequency, urgency, and incontinence. Residual urine is 800 ml. Three months after the initiation of clean intermittent catheterization, she complains of recurrent incontinence associated with an acute exacerbation of her multiple sclerosis requiring treatment by steroids. The incontinence is most likely due to:

A) noncompliance with catheterization.
B) detrusor-sphincter dyssynergia.
C) hyperreflexic detrusor dysfunction.
D) overflow incontinence.
E) neuropathic urethral dysfunction.

**Correct Answer** **C**

**Explanation** Approximately one-third of patients with multiple sclerosis who are in retention go on to develop hyperreflexic bladder dysfunction and require anticholinergic agents. Urinary symptoms and urodynamic findings often change as the disease progresses and, for this reason, these patients must be carefully followed with the knowledge that therapy may need to be periodically altered.

**296.** A 62-year-old woman with metastatic renal cancer develops lethargy and confusion. Laboratory studies reveal: serum calcium 15.6 mg/dl, phosphorus 4.4 mg/dl, and creatinine 2.0 mg/dl. The best initial therapy is:

A) mithramycin.
B) furosemide.
C) steroids.
D) intravenous saline.
E) calcitonin.

**Correct Answer** **D**

**Explanation** This patient manifests the paraneoplastic syndrome of hypercalcemia. The hypercalcemia needs to be controlled promptly, and therapy should begin with hydration with isotonic sodium chloride. Hydration should result in an increase in calcium excretion and lowering of serum calcium levels to acceptable ranges. All other therapies are appropriate and effective if saline hydration is inadequate to return serum calcium to safe levels.

**297.** One day following percutaneous nephrostolithotomy, hemiacidrin irrigation is initiated through the nephrostomy tube to manage residual fragments. Three hours after starting the irrigation, the patient becomes confused and hypotensive. The most likely cause of this condition is:

A) hypermagnesemia.
B) hypocalcemia.
C) hypoxia.
D) sepsis.
E) hypokalemia.

**Correct Answer** **D**

**Explanation** Patients undergoing hemiacidrin irrigation for struvite calculi are susceptible to the absorption of magnesium, especially if the pressures in the renal pelvis become excessive. However, it is rare that toxic levels of magnesium could occur within the time frame stated in the above clinical scenario. Although antibiotics are routinely used peri-operatively in the treatment of struvite calculi, urinary sepsis may occur. Hypotension and confusion are common sequela of sepsis. Blood cultures would offer the best diagnostic study in this situation. Routine blood studies including electrolytes and serum magnesium should also be obtained but are less likely to provide the diagnosis. Acute calcium imbalance rarely occurs as the result of hemiacidrin irrigation or following percutaneous nephrolithotomy.

**298.** Thirty hours after a successful left percutaneous nephrolithotomy, a 35-year-old man has a fever of 100.2°F, ileus, urine mixed with feces from the nephrostomy tube, and bloody stools. His WBC is 18,000/cu mm. Nephrostogram demonstrates that the tube is transcolonic. The next steps are to administer parenteral antibiotics, prohibit food by mouth, and:

A) observe the patient.
B) withdraw the nephrostomy tube into the renal pelvis.
C) place a second nephrostomy tube.
D) perform a colostomy.
E) close the bowel perforation.

**Correct Answer** **B**

**Explanation** After withdrawing the nephrostomy tube into the renal pelvis, the colonic fistula will usually close in a few days if discovered promptly. Alternatively, the nephrostomy tube can be completely removed and a double-J stent inserted. Surgical closure or colostomy should be reserved for cases that have persistent fever and evidence of abscess formation.

**299.** A 57- year- old man has recurrent urinary stones. Previous stone analyses revealed both calcium oxalate monohydrate and uric acid. The underlying metabolic abnormality can best be determined with:

A) urine pH.
B) serum uric acid.
C) urinary uric acid crystals.
D) 24-hour urinary uric acid.
E) sodium nitroprusside test.

**Correct Answer** **A**

**Explanation** Patients with gouty diathesis can form either uric acid or calcium stones. The most important diagnostic test in patients with gouty diathesis is urine pH, with these patients consistently having a urine pH below 5. Alkalization with potassium citrate will prevent formation of both uric acid and calcium oxalate stones in patients with gouty diathesis.

**300.** A 24-year-old man undergoes a left inguinal orchiectomy for removal of a Leydig cell tumor of the testis. CT scan of the abdomen is negative. The most appropriate management is:

A) cis-platinum-based chemotherapy.
B) retroperitoneal lymphadenectomy.
C) subdiaphragmatic radiation therapy.
D) contralateral testis biopsy.
E) expectant therapy with periodic evaluations.

**Correct Answer** **E**

**Explanation** Most interstitial (Leydig) cell tumors are benign and confined to the testis. As a result, an inguinal orchiectomy is definitive therapy and aggressive adjuvant intervention is not indicated. Patients with these tumors can be followed with periodic evaluations consisting of endocrine studies and computed tomography of the retroperitoneum.

**301.** A 64-year-old man undergoes 12 weekly bladder instillations of BCG after transurethral resection of a high-grade Stage T1(A) transitional cell carcinoma. Six weeks after receiving his last treatment, he undergoes a cystoscopy and IVP which are normal; however, a voided cytology shows highly atypical cells suspicious for malignancy. The next step is:

A) bilateral ureteral catheterization and barbotage for cytology.
B) cold cup biopsy of the prostatic urethra.
C) brush biopsy of both upper collecting systems.
D) repeat cystoscopy with bladder biopsy and IVP in six weeks.
E) administration of monthly BCG instillations for one year.

**Correct Answer** **D**

**Explanation** Almost all persistently positive cytologies in the first six months after BCG treatment for T1 or Tis disease are due to disease in the bladder, and in this setting an extensive search for extravesical disease is not indicated. In addition, cytologies may continue to revert to normal for three months after the last BCG treatment. Repeat cystoscopy, upper tract evaluation, and bladder biopsy is the most effective way to detect a recurrence. Disease can also recur in the prostatic urethra; however, transurethral bladder biopsy is the most effective means by which to make the diagnosis.

**302.** Cadaveric kidneys are procured from a 52-year-old woman with a five year history of hypertension controlled with a converting enzyme inhibitor. She died of a cerebral hemorrhage. The terminal serum creatinine was 1.2 mg/dl. The kidneys measured 12 cm each. Renal biopsies demonstrate 3% glomerulosclerosis on the right and 8% on the left. Both renal arteries are normal. The best use of these kidneys is to:

A) discard them due to history of hypertension.

B) discard them due to death from cerebral hemorrhage.

C) transplant the right, discard the left due to poor biopsy.

D) transplant both kidneys into a single recipient.

E) transplant each kidney into a separate recipient.

**Correct Answer** **E**

**Explanation** The shortage of donor organs is the main factor limiting the number of kidney transplants. This has resulted in an expansion of criteria used to assess donor organs. The extremes of donor age represent the largest opportunity for expanding the donor pool. Potential donors with diseases formerly considered contraindications to donation are now being considered as kidney donors. In such cases kidney biopsies are performed and should demonstrate < 10% glomerulosclerosis, as well as the absence of interstitial fibrosis or small vessel disease. Such kidneys can be successfully transplanted with reasonable outcomes.

**303.** In the diagnostic evaluation of excess cortisol secretion, the administration of 2 mg of dexamethasone q.i.d. (high dose) for two days results in:

A) no suppression of urinary corticosteroid secretion in normal patients.

B) suppression to less than half the baseline in patients with adrenal hyperplasia.

C) suppression to less than half the baseline in patients with benign cortical adenoma.

D) suppression to less than half the baseline in patients with adrenal carcinoma.

E) increased urinary secretion in patients with adrenal carcinoma.

**Correct Answer** **B**

**Explanation** The dexamethasone suppression test is known to have a false positive rate of approximately 20%. However, false negative tests are rare. Dexamethasone administration should result in suppression of plasma cortisol values (50% of pretreatment value), urine 17-hydroxysteroids and urine free cortisol in patients with Cushing's Syndrome. Pituitary imaging with CT or MRI will disclose an adenoma in 50% of such cases. Cortisol levels fail to fall to these levels in patients with adrenal carcinoma or ectopic ACTH secretion.

**304.** The formation of calcium oxalate stones following small bowel bypass surgery is primarily due to:

A) increased endogenous oxalate production.
B) increased intestinal calcium absorption.
C) increased intestinal oxalate absorption.
D) chronic dehydration.
E) hyperuricosuria.

**Correct Answer** **C**

**Explanation** Enteric hyperoxaluria is often found in patients with extensive bowel disease or resection of the small intestine, in the presence of an intact colon. Fat malabsorption in these patients will bind with calcium to form calcium soaps, thereby leaving less calcium available to bind free oxalate in the small bowel. Moreover, the malabsorption of fatty acids and bowel salts will also increase the colonic permeability to oxalate. Therefore, increased intestinal permeability to oxalate as well as increased free oxalate availability will lead to increased oxalate absorption from the colon with subsequent hyperoxaluria. In addition, to hyperoxaluria, these patients will often have low urine volumes due to fluid losses from chronic diarrhea as well as hypocitraturia, secondary to metabolic acidosis.

**305.** A 70-year-old woman has a painful bulging mass per vagina. She denies any urinary incontinence. Physical examination reveals a Grade IV cystocele that requires frequent daytime manual reductions when walking. The best management is:

A) videourodynamics.
B) videourodynamics with a pessary in place.
C) repair of cystocele.
D) repair of cystocele with simultaneous sling procedure.
E) observation.

**Correct Answer** **B**

**Explanation** Preoperative urodynamics with and without prolapse reduction is essential for making the correct diagnosis of masked stress incontinence in women with urogenital prolapse. This occurs in approximately 50% of women with urogenital prolapse. The decision to perform a concomitant prophylactic anti-incontinence procedure should be tailored to individual urodynamic findings.

**306.** A 55-year-old man with an enlarged prostate but no previous voiding symptoms undergoes an abdominoperineal resection for rectal carcinoma. When the indwelling urethral catheter is removed one week postoperatively, he voids with a weak stream and has over 400 ml residual urine. The best management is:

A) bethanechol.
B) TURP.
C) clean intermittent catheterization.
D) indwelling urethral catheter.
E) terazosin.

**Correct Answer** **C**

**Explanation** Urinary retention in this middle-aged man is most likely due to interruption of the neural input to the bladder due to the abdominoperineal resection. In nearly 5-10% of patients, detrusor areflexia is permanent. Intermittent self-catheterization offers the least morbid and most effective treatment. Transurethral resection of the prostate is likely to result in urinary incontinence because of the effects of the neural injury on external sphincter function. Although alpha-blockers such as terazosin can reduce outlet resistance, in the presence of detrusor areflexia, incomplete bladder emptying will persist. Bethanechol will not improve bladder contractility. Chronic indwelling catheters should always be avoided because of significant long-term risks.

**307.** During an uneventful living-related donor nephrectomy, the kidney becomes noticeably soft. The next step is:

A) remove the kidney as rapidly as possible.
B) administer systemic heparin.
C) apply papaverine to the renal artery.
D) administer systemic dopamine.
E) administer furosemide.

**Correct Answer** **C**

**Explanation** Renal artery spasm is the usual cause for softening of the kidney during transplantation surgery. Topical papaverine reduces the magnitude of vascular spasm.

**308.** Alpha-fetoprotein is most frequently elevated in:

A) choriocarcinoma.
B) carcinoma of the breast.
C) bronchogenic carcinoma.
D) hepatocellular carcinoma.
E) mature testicular teratoma.

**Correct Answer** **D**

**Explanation** Elevated serum alpha-fetoprotein levels have been reported in patients with hepatocellular, pancreatic, gastric, and pulmonary carcinomas as well as benign liver conditions such as hepatitis and cirrhosis. AFP is produced by yolk sac elements in patients with germ cell tumors. These should not be present in patients with mature teratoma or choriocarcinoma.

**309.** Administration of ciprofloxacin may affect metabolism of:

A) heparin.
B) digoxin.
C) coumadin.
D) theophylline.
E) Dilantin.

**Correct Answer** **D**

**Explanation** Quinolone administration may interfere with metabolism of xanthines (i.e. theophylline or caffeine). The effect varies among the quinolones, but is most pronounced with enoxacin and less so with ciprofloxacin.

**310.** The consequence of DDAVP when used to treat nocturnal enuresis is:

A) increased urine osmolality.
B) decreased urinary sodium.
C) down-regulation of vasopressin receptors.
D) mild hyponatremia.
E) mild hyperkalemia.

**Correct Answer** **A**

**Explanation** Desmopressin (DDAVP), a vasopressin analogue, is substitutional therapy for nocturnal enuresis due to an absent nocturnal boost of endogenous vasopressin. Moffatt et al found an absolute dryness rate of 25% with this treatment and substantial improvement in a much higher percentage. Desmopressin increases urine osmolality. It does not suppress endogenous vasopressin. Electrolyte studies show no consistent alteration. Hourly nocturnal urine production drops. Chronic usage up-regulates vasopressin receptors.

**311.** A 47-year-old man whose father died of prostate cancer presents for a prostatic evaluation. The most appropriate management is an annual digital rectal examination:

A) beginning now.
B) with serum PSA beginning now.
C) with serum PSA and transrectal ultrasonography beginning now.
D) beginning at age 50 years.
E) with serum PSA determination beginning at 50 years of age.

**Correct Answer** **B**

**Explanation** Both the American Urological Association and the American Cancer Society recommend that all men 50 years of age or older with a life expectancy of 10 years or more undergo an annual evaluation consisting of a digital rectal examination and serum PSA determination. Transrectal ultrasonography is utilized for those men with an abnormal digital rectal examination or an elevated serum PSA concentration. Individuals who are at high risk for developing prostate cancer (men who are African American or have a family history) should begin this evaluation at age 40 years.

**312.** During the past two years, a 45-year-old paraplegic man requires clean intermittent self-catheterization. He uses proper technique three to four times daily, obtaining 650 ml each time. He has asymptomatic pyuria and bacilluria that is not treated. About every two months he develops a febrile urinary infection that is treated with antibiotics. Cystoscopy shows no stones and there is moderate bladder neck obstruction. There is no reflux. The most appropriate management is:

A) suprapubic cystostomy.
B) indwelling urethral catheter.
C) transurethral prostatic resection.
D) chronic antibiotic administration.
E) increasing the frequency of catheterization to six times daily.

**Correct Answer** **E**

**Explanation** Clean intermittent catheterization (C.I.C.) should be performed as often as necessary (about six times daily in this case) to keep the residual volume below 400 ml. Lapides' concept has been that good blood supply to the bladder is important to maintaining resistance to infection and that volumes above 400 ml lead to overdistention and high intravesical pressures that impede capillary perfusion. Anderson has shown lower infection rates on an every four hour catheterization schedule compared to an every eight hour schedule. Antibiotics are not routinely necessary for asymptomatic bacteriuria. Prophylactic antimicrobials do not reduce the risk of clinical urinary infections in patients on C.I.C. While TURP may be of value in establishing reflex voiding and a balanced bladder, it should not be done empirically in case the obstruction is due to sphincteric dyssynergia and the bladder-neck should not be resected. Temporary suprapubic cystostomy would be indicated for such complications as severe urethritis or epididymitis. A urethral catheter would be used briefly to manage a temporary inability to self-catheterize but is not a good

**313.** A ten-year-old boy is receiving cefotetan for an abdominal infection. He has chronic renal insufficiency secondary to reflux nephropathy with a serum creatinine of 3.0 mg/dl. Appropriate management is to:

A) discontinue cefotetan.
B) switch to cefoperazone.
C) administer Vitamin K.
D) decrease cefotetan dose by 50%.
E) increase cefotetan dosing interval.

**Correct Answer** **C**

**Explanation** Cefotetan is metabolized by the liver. No dosage adjustment is needed in patients with renal insufficiency. This cephalosporin can exert a warfarin like effect prolonging the prothrombin time and has the potential to cause hypoprothrombinemia. This complication is a particular risk for patients with renal or liver disease and administration of Vitamin K can circumvent this side effect.

**314.** A 42-year-old man had a right radical nephrectomy two years ago for a Stage T3aNoMx renal cell carcinoma. He now has right hip pain. Bone scan shows intense uptake in the right hip area and plain films of the right femur show a 3.5 cm lytic lesion. The next step is:

A) external beam radiation to the femur.
B) strontium-89.
C) internal fixation of the femur.
D) pain management.
E) systemic immunotherapy.

**Correct Answer** **C**

**Explanation** Approximately 50% of patients with multi-organ metastases from renal cell carcinoma exhibit evidence of skeletal involvement. It has been estimated that between 15% and 30% of such skeletal lesions are solitary. Eighty percent of skeletal metastases occur in the axial skeleton, thoracic/lumbar spine, and pelvis. When long bones are involved, only the proximal portions are characteristic targets for metastatic disease. Surgical treatment of bony metastases is indicated for weight-bearing bones with lytic lesions greater than 3 cm. Internal stabilization or replacement of the destroyed periarticular segment often results in significant pain relief and tremendously improves the patient's quality of life.

**315.** A 44-year-old man with invasive bladder cancer undergoes a radical cystectomy and ileal conduit urinary diversion. An ileocutaneous fistula develops on the seventh postoperative day and is managed by nasogastric suction and total parenteral nutrition. He tolerates the total parenteral nutrition well but two weeks later has a sudden onset of hyperglycemia. The most common cause for this event is:

A) subclinical diabetes.
B) insulin resistance.
C) hepatic insufficiency.
D) adrenal insufficiency.
E) infection.

**Correct Answer** **E**

**Explanation** A septic focus is the most common cause for the acute onset of hyperglycemia in a patient previously tolerating total parenteral nutrition. The hyperglycemia should be managed by subcutaneous insulin or by adding insulin to the parenteral nutrition solution; in addition, investigations should be initiated to identify a site of infection.

**316.** Which of the following is most frequently associated with renal angiomyolipoma:

A) congenital aniridia.
B) tuberous sclerosis.
C) von Hippel-Lindau disease.
D) neurofibromatosis.
E) MEN II.

**Correct Answer** **B**

**Explanation** Angiomyolipomas occur in between 40-80% of patients with tuberous sclerosis. They are often detected incidentally in patients undergoing CT scans or ultrasounds but may present with sudden pain and hypotension due to hemorrhage.

**317.** A 22-year-old man involved in an automobile accident is evaluated for multi-system trauma. A peritoneal tap is negative and his vital signs are stable. A contrast-enhanced CT scan shows complete enhancement of both kidneys, a 2 cm laceration in the lower pole of the left kidney, and a 4 cm x 5 cm left perinephric hematoma. A 3 cm splenic laceration that does not extend to the hilum is also seen. His vital signs remain stable after the transfusion of one unit of packed cells, and he is managed nonoperatively. Ten days later, he develops acute abdominal pain. On physical examination, he is diaphoretic and has a rigid abdomen. His temperature is

A) delayed sepsis.

B) persistent urinary extravasation.

C) secondary renal hemorrhage.

D) delayed splenic hemorrhage.

E) secondary hypertension.

**Correct Answer** **D**

**Explanation** Associated organ injury is common in patients with renal trauma. Nonrenal trauma accounts for the majority of the morbidity and mortality which occurs in such patients. As in the case described, CT allows staging of renal injury and detection of associated organ injury. Nonoperative management of both splenic and renal injury is possible in selected patients with renal injuries associated with limited extravasation and bleeding. Development of delayed bleeding, infection, or hypertension (related to the renal injury) is unlikely. Those cases where there are nonviable renal segments are more likely to require delayed laparotomy. Although splenic lacerations may be managed nonoperatively, up to 40% of those with Type II injuries (splenic laceration not extending to hilum) may require operative intervention. Although either injury described in the case presented may require delayed laparotomy, the splenic injury is more likely to require it.

**318.** In addition to hypercalciuria, renal tubular acidosis is associated with:

A) hyperuricosuria.
B) abnormal quantities of urinary matrix.
C) reduction in urinary citrate.
D) increase in urinary citrate.
E) hypermagnesemia.

**Correct Answer** **C**

**Explanation** Patients with renal tubular acidosis (RTA) may present with hyperchloremic metabolic acidosis if they have the complete form of RTA. More often, patients who have calcium phosphate stones may have incomplete renal tubular acidosis with normal serum electrolytes, yet they will still be acidotic. This chronic metabolic acidosis will cause a significant reduction in urinary citrate production, with patients often having urinary citrate values less than 50 mg/day. Alkalization is the treatment of choice for patients with renal tubular acidosis. Potassium alkali, usually in the form of potassium citrate, has been shown to inhibit recurrent stone formation in patients with RTA.

**319.** A 35-year-old man under epidural anesthesia has a sustained erection that prevents ureteroscopy. He is best managed by:

A) intracorporal phenylephrine.
B) amyl nitrate inhalation.
C) pudendal nerve block.
D) general anesthesia.
E) verapamil.

**Correct Answer** **A**

**Explanation** Intracorporeal injection of phenylephrine is the treatment of choice. The depth of anesthesia is unrelated to the response; antihypertensive agents are not effective; and vasodilators are dangerous in this circumstance. Drugs that reduce the erectile state during anesthesia may also be used clinically to treat priapism.

**320.** The symptom complex of orthostatic hypotension, anhydrosis, detrusor hyperreflexia, denervation of the external sphincter, and a bladder neck that is open at rest best describes patients with:

A) autonomic dysreflexia.
B) diabetic neuropathy.
C) multiple sclerosis.
D) Shy-Drager syndrome.
E) Parkinson's disease.

**Correct Answer** **D**

**Explanation** The symptom complex described above describes the Shy-Drager syndrome. This degenerative disorder results in atrophy of areas in the cerebellum, brain stem, peripheral autonomic ganglia, and thoracolumbar preganglionic sympathetic neurons. Patients with Shy-Drager syndrome usually have Parkinsonian symptoms coupled with orthostatic hypotension and anhidrosis. Because of disruption of the sympathetic innervation to the lower urinary tract, the bladder neck is open at rest. None of the other answers fit with the symptom complex described.

**321.** A 30-year-old man with infertility has distal shaft hypospadias. Semen analysis reveals an ejaculate volume of 2.0 ml, 25 million sperm/ml, 60% motility, and normal morphology. The best next test is:

A) hamster egg penetration assay.
B) antisperm antibody testing.
C) post-coital testing.
D) serum FSH and testosterone.
E) transrectal ultrasound.

**Correct Answer** **C**

**Explanation** The patient's evaluation is completely normal except for the presence of distal hypospadias. Endocrine testing is not likely to be helpful since his semen analysis is within normal limits. Sperm function testing and antisperm antibody testing are unlikely to be contributory either. Post-coital testing is indicated to determine whether the sperm are being deposited in the cervix. Insemination is indicated only if the post-coital test is abnormal.

**322.** A 45-year-old man with congestive heart failure develops epididymitis. His current medications include digoxin, enalapril and amiodarone. The next best step in management is:

A) administer ciprofloxacin.
B) discontinue enalapril.
C) discontinue amiodarone.
D) discontinue digoxin.
E) administer doxycycline.

**Correct Answer** **C**

**Explanation** The incidence of epididymitis during amiodarone therapy is reported to be as high as 11%. Epididymitis usually resolves with discontinuation of this medication and antibiotic therapy is not thought to be necessary. This condition has been associated with high serum or epididymal levels of amiodarone or its metabolites. The development of anti-amiodarone antibodies may play a role in the pathophysiology of this disorder. Lymphocytic infiltration and fibrosis of the epididymis are seen on histologic analysis.

**323.** A 53-year-old man with urgency, nocturia, and hesitancy failed terazosin treatment (secondary to orthostatic hypotension) for his lower urinary tract symptoms. His postvoid residual urine is 250 ml and his Qmax is 10 ml/sec. He has recently remarried and wishes to impregnate his spouse in the near future. The best next step is:

A) tamsulosin.
B) oxybutynin.
C) TUMT.
D) TUIP.
E) TURP.

**Correct Answer** **A**

**Explanation** All the above mentioned choices have a risk of impacting antegrade ejaculation or increasing his postvoid residual urine. Of the choices, tamsulosin offers a relatively high, but reversible risk of retrograde ejaculation. Anti-cholinergics risk worsening of his postvoid residual urine. In this scenario, tamsulosin offers treatment advantages that the others do not.

**324.** Testosterone production during differentiation of the urethra is under the regulation of:

A) fetal LH.
B) maternal LH.
C) maternal hCG.
D) fetal GnRH.
E) fetal FSH.

**Correct Answer** **C**

**Explanation** Fetal Leydig cell function during the first trimester of pregnancy is under maternal hCG regulation. The fetal pituitary does not begin to secrete gonadotropins until the second trimester of gestation. Therefore, if there is a problem with fetal hypothalamic-pituitary function, this does not become evident until the second trimester of gestation. The most common cause of micropenis is probably fetal hypothalamic-pituitary dysfunction.

**325.** The angiographic evaluation of a potential living donor is illustrated (see figures). Appropriate management of this potential donor is:

A) exclude from donation.

B) donor nephrectomy with ligation of upper pole artery.

C) donor nephrectomy with ligation of lower pole artery.

D) donor nephrectomy with extracorporeal arterial repair.

E) donor nephrectomy with aortic (Carrel) patch.

**Correct Answer** **D**

**Explanation** This donor has two renal arteries of approximately equal caliber on each side. This does not exclude the patient from donation. However, 'bench repair' will be required at the time of transplantation. 'All things being equal', the left side is chosen for donation because of the longer length of renal vein. In this case, there are two arteries on both sides so that in fact 'all things are equal'. Standard management would be a left donor nephrectomy with either side to side or end to side 'bench repair' at the time of transplantation.

**326.** A 52-year-old man develops abrupt and severe hypertension. He is poorly controlled with an ACE inhibitor, calcium channel blocker, diuretic, and minoxidil. None of these medications can be safely withheld. His creatinine is 1.3 mg/dl. The best way to evaluate for renovascular hypertension is:

A) captopril plasma renin activity test.
B) unstimulated plasma renin activity test.
C) captopril renography.
D) duplex ultrasound.
E) Lasix renography.

**Correct Answer** **D**

**Explanation** This 52-year-old man is at risk for renovascular hypertension. Of the captopril modulated testing (PRA and captopril renogram) the renogram is a better test than peripheral PRA. Critical to the performance of these tests is appropriate patient preparation. Ideally, patients should be off all medications for two weeks. This is usually not possible clinically. It is apparent that ACE inhibitors will reduce the sensitivity of testing. Other antihypertensives can be used up to the morning of testing. In this setting duplex ultrasound will give anatomic information on the renal arteries sufficient to determine the need for angiography.

**327.** The neural tissue(s) most likely to be damaged during a dorsal lumbotomy incision is (are):

A) iliohypogastric and ilioinguinal.
B) subcostal.
C) sympathetic.
D) celiac ganglion.
E) genitofemoral.

**Correct Answer** **A**

**Explanation** The iliohypogastric and ilioinguinal nerves lie posterior to the kidney and must be avoided in a posterior approach to the kidney. The other mentioned nerves are not in the surgical field.

**328.** Clear fluid with a high amylase content begins to drain from a suction catheter two days after difficult excision of a large left adrenal tumor. There is no fever and minimal leukocytosis. Two weeks later, the drainage remains copious but the overall clinical condition is stable. Optimal management is:

A) nasogastric suction and parenteral hyperalimentation.
B) endoscopic intubation of the pancreatic duct.
C) continued observation.
D) distal pancreatectomy.
E) somatostatin.

**Correct Answer** **A**

**Explanation** In this case the clinical findings are most consistent with a pancreatic fistula resulting from unrecognized intraoperative injury to the tail of the pancreas. These fistulas usually close with conservative management.

**329.** The nerve that may be easily trapped by the tacking sutures during a psoas hitch procedure is the:

A) genitofemoral.
B) ilioinguinal.
C) iliohypogastric.
D) femoral.
E) lateral femoral cutaneous.

**Correct Answer** **A**

**Explanation** The genitofemoral nerve penetrates the body of the psoas muscle at about L-3/L-4 where it travels caudally along its surface and is vulnerable to suture injury. The other nerves are all lateral or dorsal to the psoas muscle and removed from the operative site.

**330.** A 34-year-old man has a large abdominal mass, a palpable right testicular mass, and a mediastinal mass on chest x-ray. Serum alpha-fetoprotein is normal, and beta-hCG is slightly elevated. A right radical orchiectomy reveals pure seminoma. The next step is:

A) VP-16 (etoposide), platinum, and bleomycin chemotherapy.
B) abdominal and mediastinal radiation.
C) doxorubicin and cyclophosphamide chemotherapy.
D) retroperitoneal lymphadenectomy and mediastinal radiation.
E) retroperitoneal tumor biopsy.

**Correct Answer** **A**

**Explanation** This patient has stage III seminoma and should be treated with platinum-based chemotherapy. Radiation therapy alone has been demonstrated to have poor survivals compared to cis-platinum based chemotherapeutic regimens. The survival with stage IIb or greater with radiation therapy alone is on the order of 50%. With cis-platinum based chemotherapeutic protocols, however, survivals exceed 90% even for stage III disease. In addition, radiation therapy limits the amount of chemotherapy given by affecting marrow reserves.

**331.** A 45-year-old hypertensive man with a family history of renal failure was noted to have bilaterally enlarged cystic kidneys, and hepatic and pancreatic cysts during an abdominal ultrasonographic examination for abdominal/flank pain and fever. He also complained of marked dysuria. Urine cultures were obtained and he was admitted with a presumptive diagnosis of pyelonephritis. While awaiting culture results the best initial antibiotic is:

A) gentamicin.
B) ampicillin.
C) cephalexin.
D) trimethoprim.
E) nitrofurantoin.

**Correct Answer** **D**

**Explanation** Autosomal dominant polycystic kidney disease is a systemic disease with varied renal pathology including renal cysts, calculi, infection, hemorrhage and eventual renal insufficiency. Associated gastrointestinal pathology includes hepatic and pancreatic cysts. These patients also have an increased incidence of cerebral artery aneurysms. The cysts eventually become isolated structures and standard empiric antibiotics for pyelonephritis penetrate cysts poorly. Lipid soluble antibiotics are required and include trimethoprim, tetracycline, doxycycline, ciprofloxacin, norfloxacin, and chloramphenicol. Ampicillin, aminoglycosides, cephalosporins, and nitrofurantoin are not lipid soluble and thus are poor choices.

**332.** During a gynecological procedure, the most common cause for a ureteral injury is:

A) uncontrolled bleeding from a uterine artery.
B) ureteral entrapment when occluding the ovarian pedicle.
C) ureteral damage during incision of the broad ligament.
D) mistaking the ureter for the round ligament.
E) ureteral damage while encircling and occluding the ovarian pedicle.

**Correct Answer** **A**

**Explanation** In 1% of gynecological procedures, a ureteral injury occurs. This most often results from failure to identify the ureter when attempting to obtain hemostasis in the field. Provided there is a clear surgical field, ureteral injury due to confusing it with another structure or during occlusion of the uterine or ovarian vessels is distinctly unusual.

**333.** A 48-year-old man undergoes transurethral resection of a 34 gm, superficial, transitional cell bladder tumor. At the end of the resection a small bladder perforation is noted, and a large catheter is left to closed drainage. Five days postoperatively, he receives 60 mg intravesical BCG. That evening he has mild hypotension and fever. Treatment should include steroids and:

A) isoniazid.
B) rifampin.
C) cycloserine.
D) isoniazid and rifampin.
E) isoniazid, rifampin, and cycloserine.

**Correct Answer** **E**

**Explanation** The history of a large tumor resection, bladder perforation, and rapid symptoms of sepsis following intravesical BCG therapy all suggest systemic drug absorption and infection. Anaphylaxis and death may occur in rare cases. Early triple drug tuberculosis therapy with isoniazid, rifampin, and cycloserine is indicated for severe BCG infections. Milder infections may be treated with the first two drugs alone.

**334.** Renal blood flow is autoregulated by:

A) sympathetic nerves.
B) glomerular filtration rate.
C) cardiac output.
D) parasympathetic nerves.
E) afferent arteriolar resistance.

**Correct Answer** **E**

**Explanation** Autoregulation of glomerular filtration rate and renal blood flow occurs primarily through variations in afferent arteriolar resistance. Micropuncture studies support the hypothesis that changes in rate of fluid flow in the distal tubule elicit these changes in glomerular arteriolar resistance, a phenomenon known as distal tubuloglomerular feedback. Renal autoregulation is responsible for the relatively small changes in renal blood flow and glomerular filtration rates over wide ranges of perfusion pressures. This autoregulation is present in both innervated and denervated kidneys.

**335.** In hypogonadal men, the agent which improves the results of nocturnal penile tumescence testing but does not affect erection in response to erotic films is:

A) testosterone.
B) L-Dopa.
C) sildenafil.
D) yohimbine.
E) bromocriptine.

**Correct Answer** **A**

**Explanation** Androgen replacement in hypogonadal men does increase sexual activity and interest. The relationship between androgen replacement and penile erection is not so straightforward. When evaluated with nocturnal penile tumescence testing, hypogonadal men demonstrate decreased erectile activity and this abnormality is corrected with testosterone replacement. Laboratory tested erectile responses to erotic films, however, are usually normal in hypogonadal men. These observations are consistent with the conclusion that the major effect of testosterone therapy on sexual function is to enhance libido and not to directly improve penile erection in a sexual setting. The answer to the question is, therefore, testosterone. None of the other drugs are known to exert these effects.

**336.** A 23-year-old man undergoes local excision of a paratesticular mass through a scrotal incision. Pathology reveals an adenomatoid tumor. The best next step is:

A) observation.
B) serum AFP and hCG determination.
C) abdominal and pelvic CT scan.
D) inguinal orchiectomy.
E) inguinal orchiectomy and partial scrotectomy.

**Correct Answer** **A**

**Explanation** Adenomatoid tumors are innocuous lesions of the testis and epididymis which generally follow a benign course. Local excision alone is adequate therapy.

**337.** The mechanism of action of aminoglutethimide for the treatment of metastatic adenocarcinoma of the prostate gland is:

A) inhibition of adrenal steroid synthesis.
B) inhibition of 5-alpha-reductase.
C) competition for LH-RH receptor sites.
D) competition for testosterone receptor sites.
E) suppression of LH.

**Correct Answer** **A**

**Explanation** Aminoglutethimide inhibits the conversion of cholesterol to pregnenolone, the first step in steroid biosynthesis. As a result, the drug causes inhibition of cortisol and adrenal androgen production. This latter effect of aminoglutethimide is used in the treatment of patients with prostate cancer who have failed primary hormonal therapy. Its efficacy is controversial. Patients given this drug must also be given corticoid replacement.

**338.** Routine staining of a bone biopsy from a 60-year-old man with diffuse metastases reveals poorly differentiated adenocarcinoma. The immunohistochemical stain most likely to determine whether the tumor is of prostatic origin is:

A) cytokeratin.
B) prostate specific membrane antigen (PSMA).
C) prostatic acid phosphatase.
D) prostate specific antigen (PSA).
E) alkaline phosphatase.

**Correct Answer** **B**

**Explanation** In a study of 184 radical prostatectomies from previously untreated patients, Bostwick et al found intense cytoplasmic epithelial immunoreactivity for PSM (prostate specific membrane antigen) in every prostate cancer. The most extensive and intense staining for PSM was observed in high grade carcinoma (Gleason primary pattern 4 or 5) with immunoreactivity in virtually every cell. Studies have shown that individual cells in poorly differentiated carcinoma produce less PSA than cells in well differentiated and moderately differentiated carcinoma and also normal prostate epithelium.

**339.** A 30-year-old man with membranous nephropathy has generalized anasarca. The serum creatinine is 1.7 mg/dl. A 24-hour urine contains 6.8 gm protein. Other likely associated findings include:

A) hypoproteinemia, hypocholesterolemia.
B) hypercholesterolemia, increased total body sodium.
C) hypovolemia, reduced total body sodium.
D) hyponatremia, hyperkalemia.
E) hypovolemia, metabolic acidosis.

**Correct Answer** **B**

**Explanation** This patient has nephrotic syndrome with generalized anasarca. In this disorder, increased permeability of the glomerular capillary basement membrane leads to leakage of plasma protein into the glomerular filtrate and urine. The resulting hypoproteinemia causes a drop in circulatory volume. This leads to decreased renal perfusion and activation of the renin-angiotensin system with subsequent release of aldosterone. Sodium is retained and the temporary hyperosmolality increases ADH secretion. Total body sodium and water increase, but the serum sodium does not usually change because the increased fluid goes into the extracellular space, causing edema. The secondary aldosteronism may also cause an increased bicarbonate, alkalosis, and hypokalemia. The nephrotic syndrome is also characterized by an increase in plasma lipid concentration which includes cholesterol, phospholipids, and triglycerides.

**340.** A 50-year-old woman has irritative and obstructive voiding symptoms and urgency incontinence. Videourodynamics demonstrates normal bladder capacity, peak flow of 6 ml/sec, peak detrusor voiding pressure of 45 cm H<sub>2</sub>O, residual urine of 150 ml, a silent external sphincter, minimal opening of the bladder neck during voiding, and no cystocele. Cystoscopy is normal. The next best step is:

A) oxybutynin.
B) biofeedback.
C) urethral dilation.
D) terazosin.
E) transurethral incision of bladder neck.

**Correct Answer** **D**

**Explanation** This patient has urodynamic findings consistent with functional bladder neck obstruction. Approximately 50% of these patients respond to alpha-blocker therapy.

**341.** Stage for stage, renal cell carcinoma has the poorest prognosis if the histology is predominantly:

A) clear cell.
B) papillary.
C) sarcomatoid.
D) chromophobe.
E) mixed clear and granular cell.

**Correct Answer** **C**

**Explanation** Sarcomatoid renal tumors are unusual but are associated generally with a poor prognosis. There is no convincing evidence that any of the other histologies commonly seen with renal cancer are of strong prognostic significance.

**342.** In a patient with an absent right kidney and a left pelvic kidney, the right adrenal is:

A) absent and the left is adjacent to the upper pole of the kidney.
B) absent and the left is in the normal anatomic position.
C) in the normal anatomic position and the left is adjacent to the upper pole of the kidney.
D) in the normal anatomic position and the left is in the normal anatomic position.
E) in the normal anatomic position and the left is absent.

**Correct Answer** **D**

**Explanation** The adrenal gland is in the normal anatomic position, no matter whether the kidney is absent or ectopic.

**343.** A 60-year-old man with retinitis pigmentosa and erectile dysfunction fails to get an erection with intracorporal and intraurethral PGE-1. His serum testosterone level is 400 ng/dl and color Doppler peak flow velocity of the cavernous arteries is 16 cm/sec after 20 mcg of PGE-1. The best next step in treatment of his erectile dysfunction is:

A) counseling.
B) sildenafil.
C) insertion of penile prosthesis.
D) testosterone supplementation.
E) yohimbine.

**Correct Answer** **C**

**Explanation** In patients with inherited retinal disorders such as retinitis pigmentosa, sildenafil use is contraindicated. Sildenafil downregulates PDE-VI expression in the retina and exacerbates visual disturbances. Testosterone supplementation is only indicated in the presence of documented hypogonadism. Yohimbine is not a useful treatment. In the presence of documented arterial insufficiency, a penile prosthesis is the best treatment.

**344.** At the time of diagnosis of muscle invasive transitional cell carcinoma of the bladder, most patients:

A) have had previous urinary infections.
B) have never had a previous bladder tumor.
C) have been exposed to known occupational/environmental carcinogens.
D) are active smokers.
E) are under age 65.

**Correct Answer** **B**

**Explanation** Almost all patients who die from TCC of the bladder have prior or concurrent muscle invasive tumors. Over 84% of patients with muscle invasive disease have not had prior bladder tumors. Hence, treatment and surveillance strategies for patients with superficial tumors is not likely to reduce mortality from this disease. Patients with occupational exposure histories or prior infections have higher risk for developing bladder cancer but do not account for more than 20% of cases. In the US, the majority of bladder tumor patients have histories of smoking cigarettes, and more than half are former smokers.

**345.** A 58-year-old man has a distal ureteral stricture following ureteroscopic stone extraction. The primary factor that predicts the success of balloon dilation is:

A) length of stricture.
B) length of time since injury.
C) associated infection.
D) proximity to ureterovesical junction.
E) presence of calculus disease.

**Correct Answer** **A**

**Explanation** Although length of time since injury, associated infection, and the proximity to the ureterovesical junction can affect prognosis, the primary determinant is length of the stricture.

**346.** A one-week-old boy is observed to void in small amounts with only 5 to 10 minutes between several voiding episodes. He is otherwise apparently well. Appropriate evaluation is:

A) bladder and kidney ultrasound.
B) VCUG.
C) radionuclide cystogram.
D) observation.
E) retrograde urethrogram.

**Correct Answer** **D**

**Explanation** Normal infantile voiding patterns often include frequent small volume, incomplete voids. These have been documented in normal children using continuous ambulatory urodynamics. In the absence of other findings, no specific evaluation should be undertaken.

**347.** Type V phosphodiesterase inhibitors selectively relax smooth muscle of the:

A) prostate.
B) penis.
C) detrusor.
D) urethra.
E) ureter.

**Correct Answer** **B**

**Explanation** Phosphodiesterase (PDE) inhibitors were initially developed for the treatment of heart disease. The PDE-5 are predominant in the corporal smooth muscle of the penis and are inhibited selectively by sildenafil citrate. The smooth muscle of the vascular system and platelets are additional locations of PDE-5.

**348.** The most important development in the prevention of catheter-associated urinary tract infections in hospitalized patients is the:

A) use of silicone-coated catheters.
B) addition of Betadine.
C) institution of daily antibacterial meatal care.
D) use of oral antibiotics.
E) closed catheter drainage system.

**Correct Answer** **E**

**Explanation** Without question, the most important development in the prevention of catheter-associated UTI's in hospitalized patients has been the closed catheter system. When inserted and maintained properly, the entire system, from the aseptically introduced catheter tip in the bladder to the urinary drainage bag, is closed to the outside environment. If the integrity of the system is disrupted, however, the risk of infection increases. An 'open' drainage system assures about a 100% incidence of catheter-associated UTI within three to four days, whereas a 'closed' drainage system reduces the rate of infection to about 5% per day, with the median onset for significant bacteriuria the eighth day of catheterization.

**349.** A one-month-old girl has massive right hydronephrosis secondary to ureteropelvic junction obstruction. The left kidney appears normal. Isotope renography shows relative renal function of 85% on the left and 15% on the right. The best next step is:

A) right nephrectomy.
B) right percutaneous nephrostomy.
C) repeat renography in three months.
D) right pyeloplasty.
E) right cutaneous pyelostomy.

**Correct Answer** **D**

**Explanation** The immediate repair of a ureteropelvic junction obstruction is advised in infants. Neither delay nor removal of this kidney is appropriate since the functional capacity may improve after relief of obstruction, particularly in this age group. Temporary nonintubated cutaneous diversion may provide an acceptable alternative in the very ill or septic infant. Nephrostomy drainage is not recommended in young infants.

**350.** A 27-year-old woman at 30 weeks of gestation has gross hematuria. Ultrasound shows a normal pregnancy and a maternal bladder lesion. Cystoscopy reveals a 3 cm pedunculated papillary lesion. The remainder of the bladder is normal. The most appropriate management is:

A) immediate transurethral resection.

B) early delivery followed by transurethral resection.

C) transurethral resection after term delivery.

D) remove tumor with cup biopsy forceps at initial cystoscopy.

E) immediate tumor ablation with Nd:YAG laser.

**Correct Answer** **C**

**Explanation** Transitional cell carcinoma of the bladder during pregnancy is uncommon. Hematuria during pregnancy may be mistaken for antepartum bleeding. Although hematuria is often due to infection, other causes must be kept in mind. Bladder sonography has been very accurate in detecting tumors in pregnant women. Although ultrasound is a good screening technique, it is still not reliable and cystoscopy should be considered in all pregnant patients with documented gross hematuria or persistent microscopic hematuria. Cystoscopy revealed a typical papillary low grade tumor. The endoscopic tumor resection should be performed after the delivery. Immediate resection under anesthesia might induce uterine contractions. Bladder tumors in this age group almost always are low grade and noninvasive, and as such do not require immediate removal.

**351.** A 47-year-old man with diabetes mellitus has erectile dysfunction, decreased vibratory sensation in his feet and fasting blood sugars over 300 mg/dl. Effective treatment of the erectile dysfunction can be achieved with:

A) exogenous testosterone.
B) exogenous gonadotropins.
C) improved diabetic control.
D) Vitamin B complex.
E) penile prosthesis.

**Correct Answer** **E**

**Explanation** Exogenous androgen, gonadotropin and vitamin therapy does not restore potency in the diabetic male. Even with good control of the underlying diabetes, erectile dysfunction usually persists. Alternative therapies such as sildenafil citrate, intracavernous injection therapy, and a vacuum erection device can also be effective in many of these patients. Some diabetic patients will ultimately require a penile prosthesis.

**352.** The tetracyclines are:

A) bactericidal and inhibit bacterial protein synthesis.
B) bacteriostatic and inhibit bacterial protein synthesis.
C) bactericidal and inhibit bacterial cell wall synthesis.
D) bacteriostatic and inhibit bacterial cell wall synthesis.
E) bacteriostatic and inhibit folic acid synthesis.

**Correct Answer** **B**

**Explanation** The tetracyclines inhibit protein synthesis by binding the 30S ribosomal subunit which interferes with the addition of amino acids to the growing peptide chain. They are bacteriostatic.

**353.** A 30-year-old man undergoing VIP (vinblastine, ifosfamide, cisplatum) chemotherapy for metastatic germ cell carcinoma develops gross hematuria. Evaluation includes a CT scan showing normal kidneys and collecting systems and a thickened bladder wall. Cystoscopy discloses no visible tumor in the bladder but the mucosa is diffusely hemorrhagic. The hematuria could have been prevented by:

A) aminocaproic acid (Amicar).
B) bladder irrigation during therapy.
C) intravenous hydration and urinary alkalinization.
D) use of carbo-platinum instead of cis-platinum.
E) mercaptoethane sulfonate (Mesna).

**Correct Answer** **E**

**Explanation** Cytoxan and ifosfamide induced cystitis is caused by acrolein. The concomitant administration of Mesna binds the acrolein, minimizing its untoward effects. Efforts to minimize the contact time with the bladder mucosa may also be beneficial. Hydration and urinary alkalinization would not have any significant effect.

**354.** The primary advantage of ultrasound for ESWL stone localization is:

A) capability for real-time monitoring.
B) short learning curve.
C) multifunctional use for diagnosis and endourological treatment.
D) ability to identify ureteral calculi.
E) efficacy in clinical situations with multiple calculi.

**Correct Answer** **A**

**Explanation** The major advantages of fluoroscopy for stone location are: a short learning curve, a wide range of indications for in situ treatment, and multifunctional use of x-ray. The localizing problems for fluoroscopy consist chiefly of stones close to the vertebral column and radiolucent calculi. The advantages of ultrasound for stone location are: low purchase costs and maintenance, no x-ray exposures, the possibility of real-time monitoring, and location of radiolucent calculi. Calculi in the middle ureter are almost impossible to localize with ultrasound. Multiple calculi may be problematic for ultrasonic stone location.

**355.** Renal dysplasia is most likely to be associated with:

A) ectopic ureterocele.
B) ureteropelvic junction obstruction.
C) vesicoureteral reflux.
D) simple ureterocele.
E) posterior urethral valves.

**Correct Answer** **A**

**Explanation** Although renal dysplasia is occasionally seen in association with each of these entities, it is most frequently found in the renal segment subtending an ectopic ureterocele.

**356.** The major limiting side effect of gonadotropin-releasing hormone agonists in the treatment of BPH is:

A) hot flashes.
B) gynecomastia.
C) oligospermia.
D) erectile dysfunction.
E) acute urinary retention.

**Correct Answer** **D**

**Explanation** GnRH or LHRH agonists cause hypogonadism by altering the secretion of gonadotropins from the pituitary. This hypogonadism results in erectile dysfunction in men who are potent. This is the major limiting step in the use of these compounds in men for BPH.

**357.** A 55-year-old woman has a one-year history of persistent asymptomatic, pansensitive Proteus urinary tract infection despite continuous oral penicillin drug therapy. There are multiple 1-2 mm calculi in an upper pole calyx of the left kidney. The right kidney is normal as are cystoscopy and VCUG. The recommended treatment is:

A) partial nephrectomy.
B) ESWL of the calculi.
C) percutaneous chemolysis.
D) intravenous antibiotic therapy for two weeks.
E) continued penicillin therapy.

**Correct Answer** **B**

**Explanation** Patients with struvite calculi can be treated effectively with shock wave lithotripsy. This is especially true when the stone volume is low and the calculi are located in nondependent portions of the renal collecting system.

**358.** The risk of HIV transmission from a single blood transfusion is:

A) 1 in 25,000.
B) 1 in 50,000.
C) 1 in 250,000.
D) 1 in 500,000.
E) 1 in 1,000,000.

**Correct Answer** **D**

**Explanation** In the United States, transmission of HIV by blood transfusion occurs almost exclusively when a recently infected blood donor is infectious but before antibodies to HIV become detectable 'during the window period.' Based on the latest information estimating the risk of HIV transmission, it was estimated that there was a risk of 1 case of HIV transmission for every 450,000 to 660,000 donations of screened blood. Surgeons should be aware of this statistic as their patients do ask this important question.

**359.** The primary advantage of tamsulosin over doxazosin for the treatment of BPH is:

A) greater efficacy.
B) less retrograde ejaculation.
C) more favorable lipid effects.
D) no effect on blood pressure in hypertensives.
E) no dose titration.

**Correct Answer** **E**

**Explanation** Tamsulosin exhibits partial selectivity for the alpha-1A over the alpha-1B adrenoceptor subtype. Tamsulosin 0.4 mg is an effective dose and is administered without dose titration. Doxazosin requires titration to an effective dose. Tamsulosin is no more effective than doxazosin and has a greater incidence of retrograde ejaculation. Although tamsulosin does not lower blood pressure in hypertensive men, this is not an advantage. The effect of tamsulosin on lipids has not been well characterized.

**360.** The Mitrofanoff principle of continent urinary diversion depends on continence with:

A) an ileal nipple.
B) intussuscepted ileum.
C) an appendix flap valve.
D) detubularized bowel.
E) both large and small bowel segments.

**Correct Answer** **C**

**Explanation** The Mitrofanoff principle of continent urinary diversion is represented by a large capacity reservoir of low pressure with a small caliber conduit implanted into the reservoir in a non-refluxing (flap valve) manner (usually appendix) and the use of clean intermittent catheterization to empty the reservoir at regular intervals. The Kock pouch has employed an ileal nipple and the Indiana pouch has employed imbricated ileum. Detubularized bowel and various bowel segments have been utilized in many forms of continent urinary diversion but are not specifically identified with Mitrofanoff.

**361.** A 24-year-old man with a gunshot wound shattering the L-4 vertebral body achieves stable neurogenic bladder dysfunction nine months later. Urodynamic studies will likely show:

A) detrusor hyperreflexia, sphincter dyssynergia.
B) detrusor hyperreflexia, normal sphincter EMG.
C) detrusor areflexia, sphincter dyssynergia.
D) detrusor areflexia, normal sphincter EMG.
E) detrusor areflexia, denervation potentials on EMG.

**Correct Answer** **E**

**Explanation** An injury to the vertebral column at L-4 injures the cauda equina and, depending on the extent of neural damage, will produce a loss of motor and sensory fibers to the bladder, pelvic floor, and external sphincter. Detrusor sphincter dyssynergia is produced by suprasacral spinal cord lesions which interrupt the ascending and descending pathways between the sacral spinal cord and the center for reflex bladder and urethral function in the brain stem. Reflex detrusor function requires sacral root and sacral cord integrity. While an areflexic bladder faces fixed internal sphincter activity, that activity is normal and not truly dyssynergic. Since within the sacral and lumbar canal nerve roots are intermingled, a lesion which produces detrusor areflexia would be expected to have a similar effect on the external sphincter; hence, the denervation potentials.

**362.** Which antibiotic is most likely to produce hemolytic anemia in a patient with glucose -6-phosphate dehydrogenase deficiency:

A) ampicillin.
B) cephalosporin.
C) methenamine mandelate.
D) nitrofurantoin.
E) tetracycline.

**Correct Answer** **D**

**Explanation** Glucose-6-phosphate dehydrogenase deficiency of red cells occurs in about 10 percent of African-Americans and some peoples of Mediterranean and Near Eastern origin. Hemolytic anemia has occurred when people with a glucose-6-phosphate dehydrogenase deficiency have taken nitrofurantoin. It is probably related to a primaquine type sensitivity reaction and hemolysis stops when the drug is stopped.

**363.** The most common long-term sequela of a renal arteriovenous fistula occurring after needle biopsy of the kidney is:

A) hematuria.
B) flank pain.
C) diastolic hypertension.
D) tachycardia.
E) spontaneous closure.

**Correct Answer** **E**

**Explanation** Approximately 70% of fistulas occurring after needle biopsy of the kidney close spontaneously within 18 months. In the absence of significant related symptoms in such a patient, expectant management is appropriate initially. The clinical manifestations of a renal arteriovenous fistula depend upon the size of the fistula. Congestive heart failure, cardiomegaly, and diastolic hypertension are observed in 50% of symptomatic patients. Hematuria is present in about a third, tachycardia is occasionally found, and a palpable flank mass is very rarely encountered. About 75% of patients have an abdominal bruit.

**364.** A 40-year old man has painless priapism of 36 hours duration. A needle is inserted into the corpora cavernosa and bright red blood is aspirated. One hundred (100) mcg of phenylephrine are injected intracorporally and prompt detumescence occurs. Thirty minutes later, the penis is again rigid. The most likely etiology of the priapism is:

A) idiopathic.
B) trazodone ingestion.
C) intracavernosal injection of PGE<sub>1</sub>.
D) leukemia.
E) perineal trauma.

**Correct Answer** **E**

**Explanation** This patient has classic findings of high flow priapism. The priapism is painless. Bright red blood is aspirated from the corpora despite the fact priapism has been present for 36 hours. In addition, in cases of high flow priapism, the intracorporal injection of alpha-adrenergic agonists typically produces detumescence but penile rigidity quickly returns. Almost all cases of high flow priapism reported to date have been secondary to trauma and injury to the intracavernosal artery. A fistula occurs between the cavernosal artery and the corpus cavernosum; blood flow into the corpora is unregulated and high flow priapism occurs. The answer is, therefore, perineal trauma. Almost all cases of idiopathic priapism as well as priapism associated with trazodone ingestion, the intracavernosal injection of PGE1, and leukemia are associated with low flow states.

**365.** A 15-year-old sexually active boy has urethritis, confluent red papules with a yellowish scale on the glans penis, arthritis of the knees, and uveitis. The best initial treatment of the skin lesions is:

A) IM penicillin G.
B) systemic retinoids.
C) topical steroids.
D) topical podophyllin.
E) oral erythromycin.

**Correct Answer** **C**

**Explanation** This boy has Reiter's syndrome, which includes urethritis, genital skin lesions similar to those of psoriasis, arthritis and inflammatory disease of the eye (uveitis). The skin lesions alone are difficult to distinguish from psoriasis, but the complex of symptoms is specific for Reiter's syndrome. The etiology is unknown but may be triggered by infection and is likely genetic as almost all affected patients have the HLA-B27 haplotype. Initial treatment is usually with topical steroids, but if symptoms persist, systemic retinoids or even methotrexate may be needed.

**366.** The first recordable event in the micturition reflex is:

A) fall in urethral pressure.
B) rise in detrusor pressure.
C) cessation of sphincter EMG activity.
D) opening of vesical neck.
E) rise in abdominal pressure.

**Correct Answer** **C**

**Explanation** Pelvic floor muscular activity, as measured by sphincter EMG activity, is suppressed in the first stage of the micturition reflex. This occurs before any rise in detrusor pressure or fall in urethral pressure. Opening of the bladder neck does not occur until pelvic muscular activity has decreased.

**367.** A three-year-old boy has a palpable abdominal mass. Ultrasound and CT scan suggest the diagnosis of a multilocular cyst. The next step is:

A) observation with repeat ultrasound in one year.
B) cyst aspiration.
C) bone marrow aspirate.
D) nephrectomy.
E) MRI scan.

**Correct Answer** **D**

**Explanation** Microscopic foci of nephroblastoma are often found in the septae of multilocular cysts and thus, a multilocular cyst, while benign itself, is considered a premalignant lesion. This is different from a multicystic dysplastic kidney (MSD). There is very little evidence that MSD is a premalignant lesion, although some controversy exists.

**368.** The most objective measure of the severity of incontinence is:

A) number of pads used per day.
B) voiding log.
C) pad weighing test.
D) post-stress test residual volume.
E) coefficient of abdominal pressure transmission.

**Correct Answer** **C**

**Explanation** The only validated objective measure of significant urinary loss is shown to be a pad weighing test. Although useful, a voiding log is not a quantitative test. Pads per day reported by patients is uniformly a poor measure because of its subjective nature, dependence on volume, and variability between the degree of wetness and pad changes. Post-stress test residual volume or a transmission coefficient ratio has not been shown to correlate with severity of urinary loss.

**369.** A two-year-old girl has a febrile UTI. An ultrasound is normal, but a VCUG demonstrates left Grade IV/V vesicoureteral reflux. There is a compound upper pole calyx and simple calyces throughout the rest of the kidney. A DMSA scan of the left kidney one week and nine months after the infection would most likely show:
<br><table><tr><td> </td><td>One Week</td><td>Nine Months</td></tr><tr><td>A</td><td>normal</td><td>normal</td></tr><tr><td>B</td><td>normal</td><td>upper pole

A) A
B) B
C) C
D) D
E) E

**Correct Answer** **C**

**Explanation** Renal injury after a UTI in a patient with reflux will usually occur at the site of intrarenal reflux, a condition that is associated with compound calyces. Conversely, injury is less likely in other areas of the kidney, where the calyceal configuration is simple and in which there is not likely to be intrarenal reflux. Injury will occur at the time of the first infection in susceptible areas, but may not be permanent. In the case of early aggressive antibiotic therapy a temporary injury may heal and a permanent scar may be avoided.

**370.** A 45-year-old man with no previous voiding difficulty requires catheterization for urinary retention following a lumbar laminectomy. A combined CMG and external sphincter electromyogram shows normal bladder compliance but no detrusor contraction. An increase in pelvic floor muscle activity is seen when the patient coughs or strains. The most likely cause for urinary retention is:

A) detrusor-external sphincter dyssynergia.

B) detrusor-internal sphincter dyssynergia.

C) infravesical obstruction due to benign prostatic hypertrophy.

D) transient detrusor areflexia.

E) myogenic detrusor decompensation.

**Correct Answer** **D**

**Explanation** This patient demonstrates no evidence of a detrusor contraction with filling of the bladder and it is assumed that he is straining to void. The pelvic floor skeletal muscles contract in response to intra-abdominal straining which is a normal cause for increased activity. Significant prostatic hypertrophy with infravesical obstruction is unlikely in the absence of previous voiding difficulty. Because of normal detrusor compliance, there is no evidence that the bladder has been chronically overdistended. The correct answer is transient detrusor areflexia as a result of the spinal cord changes that occur during laminectomy which will usually resolve with time.

**371.** A 68-year-old man has a nodular prostate with firm induration extending to the seminal vesicles. The serum creatinine is 2.8 mg/dl. There is bilateral ankle edema and the neck veins are prominent. An ultrasound shows bilateral hydronephrosis with ureteral dilation and 10 cc residual urine. Prostate biopsy confirms adenocarcinoma. The next step is:

A) LH-RH analogue.
B) bilateral orchiectomy.
C) pelvic radiation therapy.
D) double J-stents.
E) percutaneous nephrostomy.

**Correct Answer** **B**

**Explanation** This degree of renal insufficiency does not warrant diversion or ureteral catheterization without a trial of anti-tumor therapy. Whether to choose radiotherapy or hormonal therapy is still controversial, but it is fair to say that radiation therapy may temporarily worsen the ureteral obstruction due to tumor edema. Hormonal therapy will result in improved ureteral drainage in nearly 60% of patients. Treatment with an LH-RH analogue alone may temporarily worsen the ureteral obstruction unless given in conjunction with an antiandrogen.

**372.** A 75-year-old man with a history of peptic ulcer disease and gout has a newly-formed 2 cm radiopaque renal calculus, hypercalcemia, and an E. coli urinary infection. Chest x-ray reveals a 3 cm primary lung tumor. The most likely cause of his urolithiasis is:

A) absorptive hypercalciuria.
B) primary hyperparathyroidism.
C) ectopic hyperparathyroidism.
D) secondary hyperparathyroidism.
E) urinary infection.

**Correct Answer** **C**

**Explanation** Among the conditions this man has, only the ectopic production of parathyroid hormone related peptide would explain his stone formation. E coli is not a urea splitter and thus should not cause the stone in this man's case. Given a history of peptic ulcer disease, a stone can form due to the development of milk-alkali syndrome, however, this is not one of the listed choices. The presence of hypercalcemia rules out secondary hyperparathyroidism. While absorptive hypercalciuria likely is playing a role in this patient, it is more likely due to the effect of ectopic production of parathyroid hormone related peptide (homology to PTH in the first 13 amino acids). This ectopic production is most commonly seen with squamous cell carcinoma of the lung (as in this case), head or neck.

**373.** A 40-year-old woman has a pelvic abscess secondary to perforated sigmoid diverticulitis. The abscess is drained and a colostomy is performed. Subsequently, the sigmoid is resected and the colostomy is closed. One year later she undergoes excision of a large serous cyst of the left ovary. On the third postoperative day, urine begins to drain from the Penrose drain site. The surgical specimen is reported to include a 5 cm segment of ureter. An IVP shows a normal right kidney and ureter. The left collecting system reveals slight hydronephrosis and hydroureter down to L -5. The most appropriate treatment is:

A) left nephrectomy.

B) transureteroureterostomy.

C) interposition of an ileal segment.

D) ureteroureterostomy.

E) autotransplantation of the left kidney to the right pelvis.

**Correct Answer** **B**

**Explanation** Because of extensive damage to the tissues of the left side of the pelvis from the recent and prior diseases, a ureteroureterostomy or interposition of an ileal segment would be very difficult and apt to fail. Because the left kidney functions well and the patient is only 40 years old, nephrectomy is not indicated at this point. Autotransplantation to the right side of the pelvis is a possibility but is a formidable procedure and should be reserved for situations where there are no other reasonable options. The remaining left ureter has sufficient length and is far enough removed from the damaged tissues to permit a satisfactory transureteroureterostomy.

**374.** After six months of therapy with an LH-RH analogue, a patient with Stage D adenocarcinoma of the prostate has a serum testosterone of 50 ng/dl. The most likely explanation for this incomplete androgen suppression is:

A) increased Leydig cell sensitivity to minute amounts of LH.
B) reflex increase in ACTH.
C) increased adrenal cortical sensitivity to ACTH.
D) failure to suppress dehydroepiandrosterone.
E) peripheral conversion of estrogen into testosterone.

**Correct Answer** **D**

**Explanation** LH-RH analogues downregulate pituitary cell LH-RH cell surface receptors and totally block LH release and synthesis. Leydig cells may experience an upregulation of LH receptors, but there is no LH available for binding. The production of dihydroepiandrosterone and androstenedione, the principal adrenal androgens, is regulated by ACTH. Both of these adrenal androgens can be converted to testosterone peripherally but constitute no more than 10% of total testosterone. Manipulations of the LH-RH Leydig cell axis do not affect adrenal androgen production. Peripheral conversion of androgens to estrogens is unidirectional.

**375.** During an inguinal hernia repair, a normal appearing 3-year-old girl is found to have a testicle in the hernia sac. Further workup will reveal:

A) congenital adrenal hyperplasia.
B) testicular feminization.
C) Reifenstein syndrome.
D) hernia uterine inguinale.
E) Denys-Drash syndrome.

**Correct Answer** **B**

**Explanation** Three percent of girls with inguinal hernias have testicular feminization. A testicle is found in the hernia sac and a chromosome analysis will reveal a 46 XY karyotype. They should be raised as females and will require gonadectomy.

**376.** Increased levels of plasma testosterone-binding globulin (TeBG) and reduced free testosterone levels may be secondary to:

A) androgens.
B) estrogens.
C) growth hormone.
D) glucocorticoids.
E) obesity.

**Correct Answer** **B**

**Explanation** Increased blood levels of TeBG cause more binding of testosterone and, therefore, lower free testosterone levels. Estrogen increases plasma TeBG levels, and, therefore, reduces the free testosterone fraction. Conversely, TeBG levels are decreased by androgens, growth hormone, glucocorticoids, and obesity.

**377.** A 44-year-old woman has left flank pain. IVP shows a mass that arises from the inferior aspect of the left kidney and a normal right kidney. Ultrasound shows dense echoes within the mass. CT scan shows a 6.5 cm mass with negative 40 Hounsfield units that enhances with contrast administration. The preferred management is:

A) left partial nephrectomy.
B) left nephroureterectomy.
C) left radical nephrectomy.
D) CT-guided needle biopsy.
E) observation.

**Correct Answer** **A**

**Explanation** Negative Hounsfield units on CT scan are strongly suggestive of the presence of an angiomyolipoma. The natural history of renal angiomyolipoma can be correlated with renal size at presentation. Patients with renal angiomyolipomas greater than 4 cm in diameter are likely to be symptomatic and surgery is recommended. Renal sparing surgery is indicated when possible.

**378.** The parameter most likely to improve after varicocelectomy in adults is:

A) seminal volume.
B) sperm motility.
C) sperm morphology.
D) sperm density.
E) testicular volume.

**Correct Answer** **B**

**Explanation** After varicocele repair 70% of patients have improvement in sperm motility, 51% have improved sperm densities, and 44% have improved morphology. In adolescent varicoceles, the testes may be smaller with decreased consistency and, following correction, testicular volume may improve.

**379.** A 60-year-old man with a serum PSA of 20 ng/ml seeks treatment for a Gleason's 7 prostate cancer. DRE demonstrates bilateral induration of the prostate. Staging bone and CT scans are normal. He declines radical prostatectomy. The best management is:

A) external beam radiotherapy with adjuvant hormonal therapy.
B) high-dose external beam radiotherapy.
C) transperineal brachytherapy with I<sup>125</sup> seeds.
D) neoadjuvant hormonal therapy and brachytherapy with palladium seeds.
E) cryosurgery.

**Correct Answer** **A**

**Explanation** A recent randomized study demonstrated advantages in both biochemical failure and disease-free survival rates in men with locally advanced prostate cancer treated by external beam radiotherapy and hormonal therapy for three years afterwards. The published cancer control rates for brachytherapy, brachytherapy with neoadjuvant therapy, and cryosurgery are poor for patients with high risk features. Trials of external beam radiotherapy with dose escalation are also underway to determine if similar results can be achieved without adjuvant therapy.

**380.** The fluoroquinolone antimicrobial agents work by:

A) inhibition of cell wall biosynthesis.
B) alteration of nucleic acid metabolism.
C) inhibition of bacterial DNA gyrase.
D) inactivation of bacterial ribosomal proteins.
E) inhibition of RNA polymerase.

**Correct Answer** **C**

**Explanation** The fluoroquinolone antimicrobial drugs have rapidly become widely prescribed in urology. They work by inhibition of bacterial DNA gyrase, an enzyme that is involved with DNA supercoiling.

**381.** A 60-year-old man develops persistent mild diarrhea and fatigue five years following radical cystectomy and Kock pouch urinary diversion for Stage T<sub>2</sub> (B<sub>1</sub>) transitional cell carcinoma of the bladder. Laboratory studies reveal: Hgb 10.8 gm/dl; Na 135 mEq/l; K 4.8 mEq/l; Cl 110 mEq/l; CO<sub>2</sub> 20 mEq/l; creatinine 1.3 mg/dl. The study most likely to reveal the cause of the above findings is:

A) pouchogram.
B) serum Vitamin B<sub>12</sub> level.
C) abdominal CT scan.
D) upper GI series.
E) barium enema.

**Correct Answer** **B**

**Explanation** This patient's anemia and diarrhea are most likely due to malabsorption and acquired Vitamin B12 deficiency. Fortunately, electrolyte and metabolic disturbances are rare following continent urinary diversion. However, they do occur and are easily corrected if diagnosed.

**382.** A 74-year-old man has shortness of breath, lower extremity edema, and decreased appetite four months after a left percutaneous nephrolithotomy. He admits to intermittent gross hematuria yet his hematocrit is stable. A loud abdominal bruit is heard. An arteriogram confirms a left renal arterio-venous fistula and a normal right kidney. The preferred treatment is:

A) nephrectomy.
B) after-load reduction.
C) partial nephrectomy.
D) selective embolization.
E) angiotensin-converting enzyme inhibitor.

**Correct Answer** **D**

**Explanation** Arterio-venous fistulae are rare after percutaneous nephrolithotomy. This patient has with high output congestive heart failure and intermittent gross hematuria. Observation is not an option. Nephrectomy should be reserved for life threatening situations. In the presence of prior urinary stone disease renal preservation should be encouraged. A partial nephrectomy removes important renal parenchyma and is not without potential complications. A less invasive and more optimal approach is selective embolization. The hematuria should rapidly resolve and his heart failure will most likely improve.

**383.** Hypertension following acute ureteral obstruction is primarily due to:

A) increased sodium absorption.
B) decreased sodium absorption.
C) nephron loss.
D) decreased renal blood flow.
E) volume expansion.

**Correct Answer** **D**

**Explanation** Acute ureteral obstruction results in decreased renal blood flow due to preglomerular vasoconstriction with a resulting decreased filtered solute load, increased proximal tubular sodium absorption, and decreased sodium delivery to the distal tubule and macula densa. This results in increased renin release from the juxtaglomerular apparatus and may cause renin-mediated hypertension. Decreased sodium absorption does not occur and volume expansion would only be a problem in the setting of bilateral obstruction. Nephron loss would only occur with more prolonged obstruction. Sodium retention and/or volume expansion may cause hypertension with chronic bilateral obstruction.

**384.** After a second hypospadias repair, two fistulae appear when the urethral catheter is removed postoperatively. The catheter is replaced for two weeks but the fistulae do not heal. The best treatment is:

A) silver nitrate fulguration.
B) immediate fistulae repair.
C) place a suprapubic tube and wait six more weeks.
D) wait at least six months before repair.
E) replace the urethral catheter for another 3-4 weeks.

**Correct Answer** **D**

**Explanation** One month after hypospadias repair, it is highly unlikely that a fistula will heal spontaneously. Immediate intervention by a formal re-repair is contraindicated and a healing period of at least six months is necessary to allow edema to subside, allow revascularization, and optimize the chances for a successful secondary fistula closure.

**385.** A 52-year-old man has ESWL of a 22 mm diameter left renal pelvic stone. A 3 cm steinstrasse is found on a one week post-treatment radiograph. He is asymptomatic, even though a renal ultrasound examination shows moderate hydronephrosis. He returns in one month with fever. An IVP shows markedly delayed function of his left kidney. This problem should be managed with antibiotics and:

A) laser lithotripsy of the fragments.
B) percutaneous nephrostomy.
C) ureteral stent.
D) ureteroscopic extraction of the fragments.
E) ESWL of the most distal fragments.

**Correct Answer** **B**

**Explanation** This patient appears to be septic and his upper tract should be drained. Placement of a percutaneous nephrostomy tube is the only listed procedure that will definitively accomplish this goal. The 'sand' may pass spontaneously with a nephrostomy tube in place, thereby avoiding basket extraction, ureteroscopic extraction, or ESWL of the ureteral fragments. Ureteral injury may result from persistent attempts to extract the numerous particles.

**386.** The major cause of trabeculation in a man with bladder outlet obstruction is:

A) hypertrophy of the muscularis mucosa.
B) hypertrophy of the muscularis propria.
C) deposition of collagen type I.
D) deposition of collagen type III.
E) deposition of elastin.

**Correct Answer** **D**

**Explanation** Bladder outlet obstruction results in detrusor wall thickening. Although hypertrophy of the muscularis is generally thought to be responsible for this finding, deposition of collagen, particularly type III, is the more likely cause.

**387.** The major toxicity of gemcitabine in doses used to treat testis cancer is:

A) thrombocytopenia.
B) granulocytopenia.
C) mucositis.
D) acute renal failure.
E) peripheral neuropathy.

**Correct Answer** **A**

**Explanation** First-line cisplatin combination chemotherapy will cure 70-75% of patients with disseminated germ cell cancer. Salvage chemotherapy with standard-dose drugs not previously used, such as ifosfamide, will cure 20-25% of patients not cured with their initial induction chemotherapy. Third-line treatment with high-dose chemotherapy along with autologous bone marrow or peripheral stem-cell support has curative potential. Gemcitabine, a new nucleoside analog, is being studied in phase II trials of refractory germ cell cancer at Indiana University and in Germany. The major toxicity is hematologic, thrombocytopenia being the most common, followed by granulocytopenia. This new drug will play a major role in the treatment of refractory germ cell tumors. It is hoped that gemcitabine can be combined with other active drugs, as has been done with etoposide and ifosfamide in the past.

**388.** A 12-year-old prepubertal boy has severe right scrotal pain one day after being kicked in the groin. There is a blue area over the superior portion of the testis, but the examination is difficult due to a hydrocele. Urinalysis is normal. The next step is:

A) immediate exploration.
B) scrotal ultrasound with Doppler.
C) scrotal nuclear scan.
D) manual detorsion, exploration.
E) observation, anti-inflammatory medications.

**Correct Answer** **B**

**Explanation** A history of trauma is common in a patient with an acute scrotum. Although a testicular rupture is possible, a more likely possibility in a prepubertal boy is torsion of a testicular appendage with a blue-dot sign. Because the examination is difficult, an ultrasound is most appropriate.

**389.** Four months after a vaginal sling procedure, a woman requires clean intermittent catheterization for persistent urinary retention. The best next step is:

A) terazosin.
B) bethanechol.
C) urethral dilation.
D) continue clean intermittent catheterization.
E) urethrolysis.

**Correct Answer** **E**

**Explanation** Lifelong clean intermittent catheterization, although effective, is inappropriate if corrective surgery can restore normal function. Oral bethanechol has not been shown to effectively improve bladder contractility and is not indicated in the presence of bladder outlet obstruction. Alpha-blockers such as terazosin and urethral dilation are options but represent suboptimal therapy when compared to anatomic correction by urethrolysis. The ability of videourodynamics to predict surgical success and whether repeat bladder neck suspension should be performed at the same time as urethrolysis is controversial. Most patients however resume normal voiding and are continent without repeat suspension.

**390.** During continent reconstruction of the lower urinary tract using an intestinal segment, efforts are made to prevent reflux into the upper urinary tract in order to avoid:

A) upper tract bacteriuria.
B) transmission of pressure to the kidney.
C) intestinal mucous in kidney.
D) upper tract urine storage.
E) yo-yo effect and ureteral dilation.

**Correct Answer** **A**

**Explanation** After continent reconstruction with an intestinal segment, especially if intermittent catheterization is required to empty the reservoir, there is a high incidence of bacteriuria. An antirefluxing connection of the upper urinary tract protects the kidneys from ascending infection. Intra-reservoir pressure is transmitted to the upper urinary tract even in the absence of reflux. Successful continent reconstruction is predicated on an adequate low pressure reservoir.

**391.** A 74-year-old man with metastatic carcinoma of the prostate has been receiving leuprolide treatment for two years. He is asymptomatic except for severe hot flashes. The best way to eliminate the hot flashes is to:

A) stop leuprolide; start goserelin.
B) add megestrol acetate.
C) stop leuprolide; perform bilateral orchiectomy.
D) add flutamide.
E) stop leuprolide and follow serum PSA.

**Correct Answer** **B**

**Explanation** The optimal treatment of hot flashes from hormonal therapy is megestrol acetate (Megace). Although anecdotal reports suggest that DES may be helpful, a low and safe dose has not been determined. Although intermittent hormonal therapy has been studied in pilot series, its long-term comparability to continuous hormonal therapy is unknown. Neither orchiectomy nor flutamide would reduce the risk of hot flashes.

**392.** A 29-year-old woman has a ureteroscopic extraction of a 6 mm left lower ureteral calculus. A stone analysis reveals that its primary constituent is ammonium acid urate. A 24-hour urine is collected. The volume is 973 ml, and the sample contains little sodium, potassium, or citrate. She should be treated with:

A) withdrawal of her laxatives.
B) a liquid preparation of potassium citrate.
C) a liquid preparation of sodium citrate.
D) fluids and allopurinol.
E) sodium bicarbonate and acetazolamide.

**Correct Answer** **A**

**Explanation** Ammonium acid urate stone formation has been reported in women with a history of laxative abuse. GI loss of fluid and electrolytes leads to extracellular volume depletion and intracellular acidosis. Urine volume and the excretion of sodium, potassium, and citrate fall. All of the listed therapies would help, but withdrawal of the laxatives is the only choice that would reverse the underlying pathophysiology.

**393.** A 42-year-old man with azoospermia and primary infertility has an FSH of 15 (nl 1 -10), small volume testes, and an otherwise normal physical examination. The factor that most reliability predicts his ability to have children is:

A) vasography.
B) serum FSH.
C) wife's evaluation.
D) testicular volume.
E) karyotype.

**Correct Answer** **C**

**Explanation** The presence of small volume testes with an elevated FSH suggests the presence of non-obstructive azoospermia. Most men with non-obstructive azoospermia will have sperm retrievable from the testes with multiple biopsies which can be used in conjunction with in vitro fertilization for the wife. The most important characteristic to determine eligibility for treatment will be the wife/s age and fertility. Screening for obstruction (with vasography) is not of value.

**394.** The least likely location for an ectopic ureteral orifice in a boy is the:

A) seminal vesicle.
B) vas deferens.
C) bladder neck.
D) prostatic urethra.
E) pendulous urethra.

**Correct Answer** **E**

**Explanation** The ureter buds from the mesonephric (Wolffian) duct and is absorbed into the bladder base. Incomplete absorption of the upper segment of a duplication may lead to ectopia in those structures of mesonephric origin (seminal vesicle or vas) or into those structures of urogenital sinus origin (bladder, prostatic urethra). Ectopia distal to the verumontanum would not be expected. The development of the distal urethra relates to the development of the penis, not of the urinary tract.

**395.** A 67-year-old man with muscle invasive transitional cell carcinoma of the bladder is interested in an orthotopic neobladder with cystectomy. A contraindication for anastomosis of a reservoir to the urethra is:

A) prior urethral stricture.
B) Stage T1 cancer near the anterior bladder neck.
C) positive apical prostatic margin.
D) multifocal bladder tumors and CIS.
E) prostatic urethral CIS.

**Correct Answer** **C**

**Explanation** The presence of a tumor at the apical margin is a contraindication for an orthotopic diversion to the urethra. Patients with CIS of the prostatic urethra have a higher risk of urethral recurrence but for unknown reasons the incidence of urethral recurrence is much lower in patients undergoing an orthotopic diversion than those who have either an ileal conduit or a cutaneous continent diversion.

**396.** The mechanism of action of ketoconazole in the treatment of metastatic prostate cancer is:

A) inhibition of adrenal and testicular androgen production.
B) competition for androgen receptors on tumor cell membranes.
C) increased estradiol production.
D) direct cytolysis of tumor cells.
E) Leydig cell cytotoxicity.

**Correct Answer** **A**

**Explanation** At high doses, ketoconazole inhibits adrenal and gonadal androgen production by interfering with cytochrome P450-dependent 14-demethylation blocking the conversion of lanosterol to cholesterol and inhibition of the 17,20 lyase enzyme. It does not act to inhibit hypothalamic feedback mechanisms or compete for androgen receptors on the tumor cell membrane. Likewise, it is not directly cytotoxic to Leydig cells and is not an indirect inhibitor of tumor replication.

**397.** A 17-year-old boy has bright red urine shortly after prolonged exercise. He has no history of genitourinary disease and is otherwise asymptomatic. Urinalysis on a freshly voided urine specimen collected three hours later reveals 1+ proteinuria and > 50 RBC/hpf. There are no casts. Renal ultrasound is normal. The next step is:

A) cystoscopy.
B) IVP.
C) urinary myoglobin.
D) urinary calcium/creatinine ratio.
E) urinalysis 72 hours later.

**Correct Answer** **E**

**Explanation** Hematuria after prolonged strenuous exercise, is relatively common in individuals who are otherwise free of congenital urinary tract disease. There may be mild proteinuria with the RBCs. Erythrocyte casts are usually not present and the supernatant urine specimen is clear, ruling out significant hemoglobinuria. The urinalysis in this benign condition is generally normal 48-72 hours after the exercise. Myoglobinuria is characteristically brown and the absence of RBC's makes this diagnosis.

**398.** The obliterated umbilical artery originates from which of the following arteries:

A) superior gluteal.
B) obturator.
C) middle sacral.
D) internal iliac.
E) external iliac.

**Correct Answer** **D**

**Explanation** The umbilical artery is the first visceral branch of the internal iliac artery and is very commonly a large trunk that in its proximal unobliterated section gives rise to the superior vesical artery as its first branch. The obliterated umbilical artery is an important landmark in the pelvis as it sweeps lateral to the ureter at the pelvic brim. It can be used to mark the peritoneum in pelvic dissections and may be confused with the vas deferens in the male.

**399.** An 80-year-old woman has diffuse CIS of the bladder refractory to two six week cycles of intravesical BCG. She is not a candidate for cystectomy because of medical comorbidity. The best management is:

A) thiotepa.
B) maintenance BCG.
C) mitomycin C.
D) valrubicin.
E) doxorubicin.

**Correct Answer** **D**

**Explanation** Valrubicin has recently received FDA approval for the treatment of BCG-refractory CIS in patients who are not candidates for cystectomy and is the correct choice. Maintenance BCG is not indicated in a patient who has not responded to 2 induction cycles. Mitomycin C has little if any activity against refractory CIS, and the combination of interferon and BCG has just entered clinical trials and little data to support their use are currently available.

**400.** The factor that is most predictive of sperm being present within the proximal vas deferens at the time of a vasectomy reversal is:

A) patient age.
B) testicular interstitial fibrosis.
C) duration of obstruction.
D) length of vas deferens removed.
E) antisperm antibody status.

**Correct Answer** **C**

**Explanation** In a review of 1469 vasectomy reversals, the vasovasostomy study group found that the factor most predictive of intravasal azoospermia is the duration of obstruction. The other factors are more predictive of fertility after a successful vasectomy reversal.

**401.** A ten-year-old boy with sickle cell disease has had an erection for 24 hours. The most appropriate management is:

A) transfusion with packed red cells.
B) corporal irrigation with heparinized saline.
C) intracorporal methylene blue.
D) cavernosum-spongiosum shunt.
E) hyperbaric oxygen.

**Correct Answer** **A**

**Explanation** The etiology of priapism in sickle cell disease is sickling of red blood cells and sludging of blood within the corporal sinuses without true thrombus formation. Despite the risk of AIDS, the most appropriate treatment is hypertransfusion with packed red cells to increase the hemoglobin to more than 10 gm/dl and to decrease hemoglobin S to 30% or less.

**402.** The lumbar triangle (triangle of Petit) is formed by the iliac crest and which muscles:

A) external oblique and latissimus dorsi.
B) internal oblique and latissimus dorsi.
C) external oblique and serratus posterior inferior.
D) internal oblique and serratus posterior inferior.
E) latissimus dorsi and serratus posterior inferior.

**Correct Answer** **A**

**Explanation** The lumbar triangle of Petit is the weakest portion of the lumbar area and may assume clinical significance as the presentation of a lumbar hernia. This triangle is useful for muscle-splitting incisions for renal biopsy and proximal ureterolithotomy.

**403.** Unilateral nephrectomy in a healthy adult is most likely to increase the risk of:

A) proteinuria.
B) hypertension.
C) nephrosclerosis.
D) interstitial nephritis.
E) renal insufficiency.

**Correct Answer** **A**

**Explanation** Unilateral nephrectomy puts healthy adults at increased risk to develop asymptomatic proteinuria. Mild hypertension may occur during long-term follow-up. Unilateral nephrectomy does not lead to significant deterioration of glomerular filtration, nephrosclerosis, or interstitial nephritis.

**404.** During gated ESWL, shock wave generation is triggered by:

A) P wave.
B) heart rate.
C) QRS complex.
D) ST interval.
E) T wave.

**Correct Answer** **C**

**Explanation** In order to decrease the likelihood of cardiac arrhythmias, the shock wave is triggered by the 'R' deflection of the QRS complex. Nonsynchronized ESWL treatment may induce arrhythmias in approximately 18%-20% of patients. Nonsynchronized treatment will most likely induce ventricular premature contractions. No relationship between the induction of arrhythmias and gender, age, presence of heart disease, stone size, or stone location has been noted. Non-gated shock wave lithotripsy requires less time and analgesia.

**405.** The laboratory values that best characterize a patient at high risk for developing a pathologic postobstructive diuresis after placement of a urethral catheter for treatment of urinary retention and bilateral hydroureteronephrosis are: <br><table width='250px'><tr valign='top' align='center'><td> </td><td>K +</td><td>Ca +2</td><td>CO<sub>2</sub></td><TD>Phos</TD></tr><tr align='center'><td>A</td><td><img src='images/up_arrow.gif' border=0></td><td><img src='images/down_arrow.gif' border=0></td><td><img

A) A
B) B
C) C
D) D
E) E

**Correct Answer** **A**

**Explanation** The patients most likely to develop a postobstructive diuresis are those with hypertension, chronic obstruction, edema, azotemia and congestive heart failure. The laboratory findings most likely to accompany these individuals include hyperkalemia, hypocalcemia, acidosis and increased phosphorous.

**406.** The maintenance fluid requirement for 24 hours for a 20 kg child with a fever of 39 deg C is approximately:

A) 1400 ml.
B) 1500 ml.
C) 1600 ml.
D) 1700 ml.
E) 1800 ml.

**Correct Answer** **D**

**Explanation** The calculation of maintenance fluids is based on the child's standard basal caloric (SBC) expenditure using the Holiday-Segar method. A 20 kg child would require 1000 ml (100 ml per kg for the first 10 kg) plus 500 ml (50 ml per kg for the second 10 kg) per 24 hours at baseline. An additional 10% would be required for each degree above 37.8, so that an additional 12.5% would be added. 1500 plus 188 is 1688, closest to 1700 ml.

**407.** A 62-year-old man becomes oliguric 24 hours after cystectomy with ileal conduit. The BUN/creatinine rise from 15/1.3 pre-op to 40/1.7 post-op. The central venous pressure is 3 cm H<sub>2</sub>O. Both ureters are stented. The next step in management is:

A) administer a cardiac inotropic agent.
B) restore adequate circulating volume.
C) administer furosemide.
D) begin low dose dopamine infusion.
E) begin a mannitol infusion.

**Correct Answer** **B**

**Explanation** Pre-renal azotemia is a common problem in the perioperative period. In this case stents are in place mitigating against obstruction. Pre-renal acute renal failure is suggested by oliguria and a > 20:1 ratio of BUN:creatinine. The initial management is to restore adequate volume status.

**408.** A 26-year-old immigrant woman previously immunized with BCG has vague left flank pain. IVP shows renal parenchymal calcifications and distorted polar calyces. Voided urine collections for tuberculosis cultures will require:

A) early morning collections.
B) collections between 4 and 8 P.M.
C) collections with an acid fixative.
D) animal inoculation because of prior BCG.
E) serial cultures to exclude false positive results because of prior BCG.

**Correct Answer** **A**

**Explanation** Voided urine cultures to detect tuberculosis are best obtained as early morning samples. Late afternoon collections are useful for schistosomiasis. Cultures may take weeks to be confirmed positive. The efficacy of BCG has tremendous geographic variation yet there is no impact on culture results. There is no longer a need for animal inoculations to confirm the diagnosis of tuberculosis.

**409.** A MAG-3 diuretic renogram is performed for unilateral hydronephrosis. The affected kidney has a split function of 45%. This indicates:

A) the kidney is functioning at just below half of normal.
B) almost half of the tracer remains in the pelvis after washout.
C) the absolute GFR is decreased by 25%.
D) 45% of tracer has been extracted by the kidney at two minutes.
E) the affected kidney is functioning at a normal level.

**Correct Answer** **E**

**Explanation** The split function represents the percentage each kidney contributes to total renal function as indicated by the amount of tracer in the kidneys at two minutes following injection of the tracer. The two numbers always add up to 100% and the margin of error is about 5% either direction. Therefore, the affected kidney is functioning at a normal level.

**410.** A 63-year-old man undergoes partial nephrectomy in a solitary kidney. The renal artery is clamped for 40 minutes without the use of surface hypothermia. Post-operatively, the creatinine rises from 1.5 mg/dl to 2.5 mg/dl. The renal structure most likely to have been injured is:

A) cortical collecting duct.
B) distal convoluted tubule.
C) juxtaglomerular apparatus.
D) proximal convoluted tubule.
E) medullary thick ascending loop of Henle.

**Correct Answer** **E**

**Explanation** The clinical scenario described is ischemic acute tubular necrosis. This is characterized by tubular cell injury which may be sublethal or lethal. During normal renal function the medulla operates at the brink of hypoxia due to countercurrent diffusion of oxygen in the vasa rectae. During prolonged ischemia medullary hypoxia is intensified and high metabolic requirements of the structures located in the outer medulla are most sensitive to injury. The medullary thick ascending limb of Henle is rich in the energy requiring Na+-K+ ATPase and is most sensitive to ischemic damage.

**411.** An 18-year-old boy with an ileal conduit and creatinine clearance of 20 ml/min is considered for urinary undiversion. An ultrasound reveals bilateral chronic pyelonephritis. A VCUG demonstrates a bladder capacity of 40 ml and reflux into an 8 cm right ureteral stump. A left retrograde ureterogram shows a 2 cm ureteral stump. Urodynamic evaluation demonstrates a small capacity bladder but is otherwise normal. The most important contraindication to undiversion is:

A) right ureterovesical reflux.
B) short left ureteral stump.
C) reduced bladder capacity.
D) reduced renal function.
E) chronic pyelonephritis.

**Correct Answer** **D**

**Explanation** None of the technical considerations including reflux, ureteral stump length, or small bladder capacity are deterrents to undiversion. Chronic pyelonephritis and scarring are common in this situation. Only severely reduced renal function (GFR < 30ml/m<sup>2</sup>) is a relative contraindication.

**412.** A 30-year-old man has a right orchiectomy for nonseminomatous germ cell testicular tumor. Two consecutive sperm counts determined within one week after orchiectomy both demonstrate eight million sperm per cc. The best description for this situation is:

A) the patient is permanently subfertile.

B) sperm counts are invalid; spermatogenesis is severely depressed by surgery.

C) the patient is subfertile but may subsequently become normal.

D) the patient is subfertile because of an elevation in hCG.

E) the patient has carcinoma in situ of the remaining testis.

**Correct Answer** **C**

**Explanation** Subfertility, based upon abnormal sperm concentrations in patients with newly-diagnosed testicular cancer, can be seen in between 17% and 69% of patients. Hypothesized causes include endocrine, autoimmune, and psychological factors as well as coexisting carcinoma in situ. Nevertheless, a number of these patients will have normalization of semen parameters with further follow-up.

**413.** A 70-year-old woman has mixed stress and urge incontinence. Her urodynamic study demonstrates an involuntary detrusor contraction with a voiding pressure of 40 cm H<sub>2</sub>0 and a Valsalva leak point pressure of 40 cm H<sub>2</sub>O. She does not improve with oxybutynin. The next step is:

A) urethral plug.
B) estrogen replacement.
C) periurethral collagen injection.
D) Burch urethropexy.
E) ephedrine.

**Correct Answer** **C**

**Explanation** The urodynamic results are consistent with detrusor instability (DI) with adequate detrusor contractility but intrinsic sphincteric deficiency (ISD). Ephedrine is a non-catecholamine sympathomimetic agent which has been shown to stimulate the release of norepinephrine. The net result of alpha-adrenergic stimulation is an increase in the resting urethral pressure, which on a theoretic basis should enhance continence due to sphincter abnormalities, but there is no effect on DI. Estrogen replacement may help but has not been shown to be effective for ISD with or without DI. Burch urethropexy is also not effective for ISD. Collagen injection results in approximately 80% improvement in ISD. Improvement in ISD can decrease severity of detrusor instability symptoms. Data concerning urethral plug for ISD and DI are lacking.

**414.** A 22-year-old man sustains a severe burn of his genitalia. There is marked bullous edema and eschar formation of the entire penis and much of the scrotum. He has had a catheter in his urethra for three days to monitor urine output. The next step is:

A) radical eschar debridement.
B) split thickness skin grafts as soon as possible.
C) antibiotic therapy and topical cleansing with water.
D) remove the urethral catheter and insert a suprapubic tube.
E) observe until the wound begins to granulate.

**Correct Answer** **D**

**Explanation** If a urethral catheter is used in a genitalia burn, it should be removed after 72 hours to prevent urethral slough and fistula formation. All viable tissue should be preserved. Minimal debridement should be used in conjunction with topical antimicrobials. After granulation occurs, split thickness skin grafts are applied.

**415.** The primary effect of parathyroid hormone (PTH) is to facilitate:

A) Vitamin D3 activity on the gut.
B) calcium reabsorption in the renal tubule.
C) phosphate reabsorption from bone.
D) intestinal absorption of calcium.
E) Vitamin D3 activity on the renal tubule.

**Correct Answer** **B**

**Explanation** Parathormone raises calcium concentrations by increasing renal reabsorption of calcium from the glomerular filtrate, enhancing resorption from bone, and influencing gastrointestinal absorption. Parathormone stimulates both bone formation and resorption and affects gastrointestinal calcium absorption indirectly through regulation of Vitamin D synthesis.

**416.** A 15-year-old boy involved in a motor vehicle accident has multiple injuries. He has been oliguric for 24 hours. Ultrasound reveals no hydronephrosis and a minimal amount of urine in the bladder. Urinary dipstick and urine sediment are normal. The following laboratory values are obtained: <br><table><tr><td>Serum creatinine</td><td>3.0 mg/dl</td></tr><tr><td>Serum potassium</td><td>5.5 mEq/l</td></tr><tr><td>Urine osmolality</td><td>525 mOsm/l</td></tr><tr><td>Urine sodium</td><td>18 mEq/l</td></tr><tr><td>Fractional excretion of sodium</td><td><1%

A) peritoneal dialysis.

B) volume replacement .

C) hemodialysis.

D) renal scan.

E) serum myoglobin.

**Correct Answer** **B**

**Explanation** The renal concentrating ability is not abolished in prerenal azotemia. Tubular function is also preserved, thus the urinary sodium concentration decreases. The intact tubular function in prerenal azotemia causes concentration of the urinary nitrogenous wastes. This leads to an elevated urine to plasma creatinine ratio, generally exceeding 40:1. Patients with acute renal failure would have increased fractional excretion of sodium and decreased urine osmolality. These patients frequently have an abnormal urinary sediment with renal tubular epithelial cells and tubular casts. If this patient had myoglobinuria, the dipstick would be positive although the urine would be negative for red cells.

**417.** A 65-year-old man develops urinary retention. Physical examination demonstrates a large benign feeling prostate gland. Urinalysis and serum PSA are normal. The serum creatinine is 3.0 mg/dl. An ultrasound reveals moderate bilateral hydronephrosis with dilation of the ureters extending to the bladder. His is placed on urethral catheter drainage. Ten days later, the serum creatinine level is 1.8 mg/dl and ultrasound shows mild hydronephrosis. The most appropriate management is:

A) continue catheter drainage.
B) doxazosin.
C) insert ureteral stents.
D) perform prostatectomy.
E) clean intermittent catheterization.

**Correct Answer** **D**

**Explanation** One of the absolute indications for surgical intervention with bladder outlet obstruction due to BPH is renal insufficiency and hydronephrosis. However, operative morbidity is reduced if catheter drainage is first used to allow improved renal function. After ten days, creatinine has improved and it is doubtful further drainage will be useful. Prostatectomy should be performed. The radiographic findings may be chronic at this point. Medical management is contraindicated in the presence of renal dysfunction.

**418.** A five-year-old boy who had urethral valves fulgurated as a newborn is referred because of wetting day and night. An ultrasound shows bilateral hydronephrosis and a VCUG shows a trabeculated bladder, no reflux and no residual valve tissue. The next step in evaluation should be:

A) antegrade pressure perfusion study.
B) cystoscopy.
C) postvoid bladder ultrasound.
D) 24-hour urine volume and urodynamics.
E) diuretic renography.

**Correct Answer** **D**

**Explanation** Boys with urethral valves often have problems with bladder training because of a combination of factors. Often those with early severe obstruction will have a persistent tubular defect resulting in polydipsia and polyuria. (These patients often are acidotic in the first few months of life.) Furthermore, these patients will also have small bladders relative to the large urine volume which will generate rather high pressures during filling (poor compliance). Although there is no persistent mechanical obstruction, they may incompletely empty the bladder because they are continuously struggling against elevated intravesical pressures and may develop a sphincter dyssynergia plus decreased sensation to increased bladder pressures. This often results in wetting day and night. The most useful studies to define this process would be a 24-hour collection for volume (and creatinine clearance) and urodynamics.

**419.** A 68-year-old asymptomatic man receives two six-week courses of intravesical BCG for recurrent bladder tumors. A new firm area in the prostate is noted on digital rectal exam. Serum PSA is 3.0 ng/ml. Ultrasound-directed needle biopsy of the lesion reveals a caseating granuloma. The most appropriate recommendation is:

A) observation.
B) repeat prostate biopsies in three months.
C) cycloserine for six months.
D) INH for six months.
E) INH and rifampin for six months.

**Correct Answer** **A**

**Explanation** Prostatic granulomas are being recognized with increasing frequency in men following intravesical BCG therapy. Although long-term outcome is uncertain, the granulomas are generally asymptomatic and no therapy is recommended. This patient had a prior normal digital rectal exam of the prostate and his serum PSA is normal. Thus, it is unlikely he has prostate cancer and further biopsies are no more indicated in him than in any other age matched male patient.

**420.** A 38-year-old man has diarrhea and loses two liters of isotonic fluid. He drinks two liters of water for fluid replacement. These fluid shifts result in:

A) decreased renin secretion.
B) decreased aldosterone secretion.
C) two liters of water added to the ECF.
D) decreased ADH secretion.
E) water moving from ICF to ECF.

**Correct Answer** **D**

**Explanation** The entire two liters of isotonic fluid are lost from the ECF. Since the loss is isotonic, the osmolality of the ECF did not change and no water moved out of the cells. The two liters of ingested pure water are distributed throughout the entire body water; one-third remains in the ECF, and two-thirds move into the cells. The addition of pure water lowers the osmolality. Even though the decreased ECF volume would stimulate ADH secretion, the reduced osmolality would inhibit it via the hypothalamic osmoreceptors. Osmoreceptor input usually predominates during such 'conflicts' unless the ECF volume depletion is very large. Renin and aldosterone secretions would increase because of the decreased ECF volume.

**421.** A four-year-old girl with spina bifida is wet between urethral catheterizations. Her detrusor leak point pressure (LPP) is 50 cm H<sub>2</sub>O and Valsalva LPP is 70 cm H<sub>2</sub>O. She is started on hyoscyamine (Levsin). A repeat urodynamic study will reveal:<br><table><tr><td> </td><td>Detrusor LPP</td><td>Valsalva LPP</td></tr><tr><td>A<br>B<br>C<br>D<br>E</td><td>unchanged<br>unchanged<br>decreased<br>decreased<br>decreased</td><td>unchanged<br>increased<br>increased<br>decreased<br>unchanged</td></tr></table>

A) A .

B) B .

C) C .

D) D .

E) E .

**Correct Answer** **A**

**Explanation** The detrusor LPP is determined by the resistance of the external sphincter. Anticholinergic medication such as hyoscyamine does not effect the external sphincter which is a striated muscle. Therefore, there should be no change in the LPP. The effect of the anticholinergic medication on the detrusor will increase bladder compliance by increasing the volume of urine stored at a given pressure. The closing pressure of the proximal urethra will not be affected.

**422.** A newborn boy has a left-sided abdominal mass. Ultrasound reveals an infiltrative mass replacing the lower third of the left kidney. The right kidney appears echogenic, but is otherwise normal. The next step is:

A) bilateral needle biopsy of the kidneys, then chemotherapy.
B) exploratory laparotomy and bilateral biopsy.
C) left nephrectomy followed by chemotherapy.
D) left lower pole partial nephrectomy followed by chemotherapy.
E) left nephrectomy and surveillance.

**Correct Answer** **E**

**Explanation** This disease process is most likely a mesoblastic nephroma and should be distinguished from a Wilms' tumor by the patient's age and the fact that it is infiltrative. Newborn kidneys are normally echogenic; hence, the right kidney is normal. The best treatment for a mesoblastic nephroma is nephrectomy and surveillance.

**423.** In idiopathic hypercalciuria, the primary effect of thiazide diuretics is:

A) hypocalciuric effect on the proximal tubule.
B) decreased intestinal absorption of calcium.
C) increased calcium reabsorption by the distal tubule.
D) lowered production of calcitriol (Vitamin D).
E) elevation of urinary citrate levels.

**Correct Answer** **C**

**Explanation** The primary effect of thiazides with regard to preventing hypercalciuria is at the renal level; both in the distal and possibly in the proximal tubule. To a lesser extent, thiazides may also decrease intestinal absorption of calcium. Thiazides may result in a slight increase in PTH levels; also they may result in a decrease rather than increase in urinary citrate levels. Thiazide has no reported effect on calcitriol levels.

**424.** A 16-year-old obese girl with myelodysplasia, mental retardation, and poor manual dexterity has total urinary incontinence and is presently treated with diapers alone. She has normal upper tracts and infected urine on occasion. She has recurrent perineal ulcers which do not heal. The best method of management is:

A) vesicostomy.
B) colon conduit.
C) bladder augmentation.
D) ureterosigmoidostomy.
E) intermittent clean catheterization.

**Correct Answer** **B**

**Explanation** Although intermittent clean catheterization is the treatment of choice for neurogenic bladder patients, in this situation it would be a poor choice. Not only would she potentially be undependable but there is good possibility that she would physically be unable to catheterize. Therefore, intermittent clean catheterization would be contraindicated and for the same reasons augmentation would be absolutely contraindicated. Ureterosigmoidostomy is not an acceptable diversion in the myelodysplastic patient because of the unreliable anal sphincter mechanism. Vesicostomy is usually not an acceptable diversion for the older patient because of the pubic hair and problems with the stoma appliance fit. The colon conduit would be well suited in this clinical situation.

**425.** A 35-year-old woman with juvenile onset diabetes is being treated with intermittent self-catheterization. She has episodes of incontinence between catheterizations. The most effective therapy is:

A) tolterodine.
B) ephedrine.
C) terazosin.
D) diazepam.
E) bethanechol.

**Correct Answer** **B**

**Explanation** This patient is being treated with intermittent self-catheterization for detrusor areflexia secondary to diabetes mellitus. Diabetes is also associated with sympathetic neuropathy which may decrease continence at the level of the proximal smooth muscle sphincter. Therefore, treatment with ephedrine, which is primarily an alpha-sympathomimetic agent, may be expected to increase resistance at this level. The success of ephedrine is at times only transient because of the development of insensitivity (tachyphylaxis). Tolterodine, an anticholinergic, is not indicated in cases of bladder areflexia. Terazosin, an alpha-blocker, is obviously not a rational choice and neither is diazepam since reducing outlet resistance is not the goal. Finally, bethanechol is not effective at improving bladder contractility and would not be expected to augment sphincter activity.

**426.** A 55-year-old obese woman with multiple medical problems is scheduled for a cystectomy and urinary diversion. Pre-operative IVP shows mild bilateral hydroureteronephrosis. At the time of cystectomy the mesentery of the bowel is shortened and infiltrated with fat. The most appropriate type of diversion is:

A) continent cutaneous diversion.
B) bilateral cutaneous ureterostomies.
C) antirefluxing transverse colon conduit.
D) ileal conduit with loop stoma (Turnbull).
E) antirefluxing sigmoid colon conduit

**Correct Answer** **D**

**Explanation** The Turnbull loop stoma (ureteroileostomy) is the most appropriate diversion in this obese patient with a short mesentery. There will be less tension on the mesentery as it traverses the abdominal wall and it will be easier to obtain a good stomal bud above skin level. Cutaneous ureterostomy requires a ureter dilated to at least 1 cm, thick walled and well vascularized. In adults with normal ureters there is a high incidence of stricture from ischemia of the cutaneous portion of the nondilated ureter. There is a higher incidence of ureterointestinal stricture using an antireflux technique with the transverse colon. The sigmoid colon may not be the best choice with cystectomy as some surgeons ligate the internal iliac arteries which may compromise rectal blood supply. The short mesentery would also preclude using an ileal or ileo-cecal continent reservoir.

**427.** After seven days of therapy with clindamycin for a Bacteroides fragilis pelvic infection, a 47-year-old man develops persistent bloody diarrhea, abdominal pain, and fever. A stool assay for Clostridium difficile is positive. In addition to discontinuing the clindamycin, the best management is:

A) opiates.
B) cefoxitin.
C) metronidazole.
D) chloramphenicol.
E) cholestyramine.

**Correct Answer** **C**

**Explanation** Clindamycin may cause pseudomembranous colitis. The syndrome, which may be fatal, is apparently due to the production of an endotoxin by clindamycin-resistant strains of Clostridium difficile. If significant diarrhea occurs, clindamycin should be discontinued. Agents that inhibit peristalsis, such as opiates, should not be given because they prolong and worsen the condition. The most active drugs against C. difficile are vancomycin and metronidazole administered for 7 to 14 days. Since metronidazole is also an alternative to clindamycin for the treatment of serious anaerobic infections, it would be the appropriate choice for this patient. Cefoxitin and cholestyramine are less effective.

**428.** The most common genetic alterations in bladder cancer are:

A) mutations of the retinoblastoma tumor suppressor gene.
B) deletions of genetic material on chromosome 9.
C) activating mutations of the ras oncogene.
D) mutations of the p53 tumor suppressor gene.
E) deletions or mutations of the p16 tumor suppressor gene.

**Correct Answer** **B**

**Explanation** Loss of genetic material on chromosome 9, which can affect p16 and a number of other genes, is commonly found in both superficial and invasive bladder tumors, and represents the most common genetic alteration in this disease. In contrast, mutations of p53 and Rb are found primarily in high grade or invasive tumors. Mutations of the ras oncogene are uncommon.

**429.** A seven-year-old girl with myelodysplasia is on CIC. Renal ultrasounds show newly developed moderate hydronephrosis. Her leak point pressure was 35 cm H<sub>2</sub>O two years ago, and is now 75 cm H<sub>2</sub>O. The likely cause of this change is:

A) recurrent UTI.
B) vesicoureteral reflux.
C) poor patient compliance with CIC regimen.
D) sphincter fibrosis from denervation.
E) urethral stricture from intermittent catheterization.

**Correct Answer** **D**

**Explanation** An increase in leak point pressure (LPP) in children with myelodysplasia can result from two principle factors. Detrusor sphincter dyssynergy can develop with evolution of the neurologic lesion, or in someone with urethral denervation that causes an initially low LPP, muscular fibrosis can produce an obstructive condition.

**430.** A 55-year-old woman develops incisional drainage two days after uncomplicated abdominal hysterectomy for uterine fibroids. The creatinine concentration of the fluid is 35 mg/dl. Abdominal ultrasound shows moderate left hydronephrosis. Retrograde pyelography demonstrates complete obstruction of the distal left ureter and a wire cannot be passed. She is afebrile and her white blood cell count is normal. The best management is:

A) percutaneous drain.
B) transureteroureterostomy.
C) nephrectomy.
D) ureteral reimplantation.
E) observation.

**Correct Answer** **D**

**Explanation** Ureteral injuries occur in approximately 1-2% of pelvic gynecologic procedures. The present case is consistent with a major ureteral injury. In the absence of major risk factors (previous radiation, malnutrition, malignancy, abscess), immediate intervention and repair is indicated. Percutaneous nephrostomy and antegrade stenting, if feasible, would be a reasonable alternative.

**431.** The vitamin that may reduce bladder cancer recurrence in patients receiving intravesical BCG is:

A) K.

B) B12.

C) A.

D) D.

E) B2 (riboflavin).

**Correct Answer** **C**

**Explanation** In a randomized prospective trial, Lamm et al showed that a combination of multivitamins plus 40,000 units of Vitamin A, 100 mg of Vitamin B6, 2,000 mg of Vitamin C and 400 units of Vitamin E was associated with a 40% recurrence rate among BCG treated patients while those receiving only multivitamins had an 80% recurrence rate. While it was impossible to determine which vitamin was conferring the most benefit, the authors speculated that Vitamin A was the most active agent. In vitro studies have shown that Vitamin A promotes differentiation of normal and neoplastic cells. Epidemiological studies suggest that carotenoids may have a protective effect in multiple human malignancies including carcinoma of the head and neck, lung, breast, cervix, prostate, and bladder. Moreover, deficiency of Vitamin A results in replacement of transitional epithelium by squamous keratinized epithelium that may exhibit increased mitotic figures, growth into the lamina propria, and vascularization.

**432.** A 50-year-old man has a right ureteral transection at the level of the pelvic brim during repair of an aortic aneurysm. Preoperatively his BUN was 28 mg/dl, and his creatinine was 1.9 mg/dl. After placement of an aortoiliac vascular graft, the best treatment of the ureteral injury is:

A) ureteral ligation, nephrostomy, and re-evaluation in two weeks.

B) ureteroureterostomy with omental wrap.

C) transureteroureterostomy above the level of the graft anastomosis.

D) cutaneous ureterostomy with a ureteral stent.

E) ipsilateral nephrectomy.

**Correct Answer** **B**

**Explanation** If a ureteral injury is diagnosed at the time of operation, primary ureteroureterostomy can usually be performed. Omentum should be used to protect the repair and isolate the repair from the vascular graft. In addition, an indwelling ureteral stent can be utilized. This form of management has usually been successful. Additional surgery might be required with a cutaneous ureterostomy. It would be unwise to sacrifice the kidney in a man with decreased renal function. It is also inappropriate to consider a transureteroureterostomy in a patient with an aneurysm.

**433.** A seven-year-old boy with myelodysplasia is wet despite frequent intermittent catheterization. Videourodynamics demonstrate no reflux with leakage at 300 ml and 20 cm H<sub>2</sub>O pressure around a 12 Fr urethral catheter. After catheter removal, he voided at 12 cc/sec with no residual. The best therapy is:

A) artificial GU sphincter.
B) anticholinergics and ephedrine.
C) bladder neck ligation and appendix urethra (Mitrofanoff).
D) periurethral collagen.
E) implant of bladder tube (Kropp procedure).

**Correct Answer** **A**

**Explanation** This young man has adequate bladder volume and compliance, but has very poor urethral resistance. Anticholinergics would not be indicated, and ephedrine may have temporary but doubtful long-term effect. The patient tolerates intermittent catheterization so that bladder-neck ligation is unnecessary. The Marshall suspension is inadequate therapy for these patients, and augmentation is unnecessary. The Kropp procedure would secure continence, but would mean the patient is totally dependent on catheterization. Because this patient has excellent compliance and is capable of compete bladder emptying, he is an ideal candidate for the artificial GU sphincter.

**434.** The manifestation of the von Hippel-Lindau syndrome that tends to be clustered only within a subset of affected families is:

A) renal cell carcinoma.
B) pheochromocytoma.
C) retinal angioma.
D) cerebellar hemangioblastoma.
E) epididymal papillary cystadenoma.

**Correct Answer** **B**

**Explanation** Penetrance for all of the manifestations of VHL is incomplete. Pheochromocytoma is found only in certain families with the VHL syndrome, primarily those with a missense mutation of the VHL gene. All of the other manifestations of VHL are found in most families with the syndrome.

**435.** A 65-year-old man with insulin-dependent diabetes chooses a vacuum constriction device for treatment of erectile dysfunction. After attempted use he reports insufficient rigidity for penetration. The most likely explanation is:

A) inadequate cavernosal arterial flow.
B) fibrosis of the corpora spongiosum.
C) corporal muscle dysfunction.
D) diabetic neuropathy.
E) improper device use.

**Correct Answer** **E**

**Explanation** The vacuum constriction device should create penile rigidity sufficient for vaginal penetration in almost all impotent men who are treated. As long as the patient does not have significant intracorporal scarring from severe Peyronie's disease or a prior infected penile implant, adequate rigidity should be obtained. Vacuum constriction devices even work in patients who have had penile prothesis removed. Often patients who are not given adequate instruction initially will not apply a sufficient amount of vacuum to fully distend the penis or do not use a small enough compressive ring at the base to achieve adequate rigidity. In these cases, instruction and reassurance is usually all that is necessary.

**436.** A 21-year-old man had a right inguinal orchiectomy for a clinical Stage I mixed germ cell tumor. He was observed and seven months later, a 4 cm mass is seen on the abdominal CT scan in the interaorto-caval region. The chest x-ray, beta-hCG, and AFP are normal. The best next step is:

A) retroperitoneal radiation.
B) right modified template retroperitoneal lymphadenectomy.
C) platinum based chemotherapy.
D) percutaneous biopsy of retroperitoneal mass.
E) full bilateral retroperitoneal lymphadenectomy.

**Correct Answer** **C**

**Explanation** This patient has an abdominal relapse after observation. Correct management is 3 cycles of BEP (bleomycin, etoposide, cisplatin) for disseminated germ cell tumor in good risk patients. Biopsy of the mass could miss elements of residual cancer and should not be performed. Although the original tumor showed elements of seminoma, radiation would not be the preferred treatment. Retroperitoneal lymphadenectomy is usually not performed for masses greater than 3 cm on CT scan, avoiding double therapy in these patients.

**437.** The most commonly acquired infectious disease following blood transfusion is:

A) cytomegalovirus.
B) HIV.
C) hepatitis A.
D) hepatitis B.
E) hepatitis C.

**Correct Answer** **E**

**Explanation** Infectious entities acquired after transfusion are hepatitis, CMV and HIV. Post-transfusion hepatitis in 90% of cases is caused by hepatitis-C. The incubation period is between two weeks and six months. Most patients are relatively asymptomatic. A serologic test is now available for its diagnosis such as the tests available for hepatitis B. Cytomegalovirus and HIV are less frequently transmitted in blood than hepatitis.

**438.** A 23-year-old man has sudden onset of fever, chills, dysuria, increased urinary frequency, and difficulty voiding. Physical examination reveals lower abdominal tenderness and a swollen, tender prostate. Prior to antibiotic treatment, culture should be obtained from the:

A) urethra.
B) catheterized urine.
C) expressed prostatic fluid.
D) voided urine after prostatic massage.
E) mid-stream urine.

**Correct Answer** **E**

**Explanation** This patient undoubtedly has acute prostatitis. Prostatic massage is to be avoided in patients with acute prostatitis as this may cause bacteremia. Consequently, c and d are not only unnecessary for diagnosis but might well be harmful. The diagnosis can be made from culture of the urine, as the organism causing the prostatitis is almost always present in the bladder urine during acute prostatitis. Cultures from the urethra are of no particular value in this case. Instrumentation of the lower urinary tract should be avoided in acute prostatitis; furthermore, it is seldom necessary to catheterize a male just to obtain a urine culture.

**439.** The physical finding that suggests the most immediate potentially life-threatening condition in the neonatal period is:

A) bladder exstrophy.
B) unilateral renal mass.
C) ambiguous genitalia.
D) aniridia.
E) scrotal mass.

**Correct Answer** **C**

**Explanation** Although the presence of bladder exstrophy, or a renal or scrotal mass, mandates prompt surgical referral, these are not life-threatening conditions. Aniridia is associated with Wilms' tumor and will require long-term follow-up. Ambiguous genitalia may represent the sequelae of salt-losing congenital adrenal hyperplasia, which can result in hypovolemic shock if not treated.

**440.** A 58-year-old woman is five months status post cystectomy and cutaneous continent diversion for a Stage B (pT2) bladder tumor. She complains of persistent low grade fevers and malaise and mild abdominal discomfort over the diversion. Her creatinine is 1.2 mg/dl and an IVP shows mild left hydronephrosis. A urine culture is positive for a pan sensitive E. coli. After treating the infection, the best next step is:

A) urine acidification.
B) program of mechanical pouch irrigation.
C) prophylactic antibiotic administration.
D) increase size of drainage catheter.
E) pouch-o-gram to evaluate reflux.

**Correct Answer** **B**

**Explanation** It is not uncommon to develop pouchitis after construction of a continent urinary reservoir. This is especially true in the early post-operative period when mucous accumulation can be high. A simple program of mechanical irrigation can decrease the incidence of infections, though asymptomatic colonization may not decrease. Using a larger catheter may help urine drainage but usually does not drain all the mucous. Prophylactic antibiotics or urine acidification are useful in patients who do not respond to simple measures and remain persistently infected. A pouch-o-gram is not the first step in evaluation and treatment at this time.

**441.** A 16-year-old phenotypic girl undergoes evaluation for amenorrhea. Testes are found on laparoscopic examination. Karyotype is 46 XY. If the gonads are not removed, the tumor most likely to develop is:

A) seminoma.
B) Leydig cell tumor.
C) gonadoblastoma.
D) embryonal cell carcinoma.
E) teratoma.

**Correct Answer** **A**

**Explanation** Complete testicular feminization is associated with a female phenotype and these patients often have a delayed presentation unless the gonads are palpable in the inguinal area earlier in childhood. These children have a 46 XY karyotype and the syndrome is due to lack of androgen receptor in the genitalia. There is an increased risk of tumor in the testes and this is most often seminoma. The risk of tumor formation increases after puberty and more than 20% of patients will develop malignancy after age 30 if the gonads are not removed. Gonadoblastoma is a tumor that may occur in intersex states associated with dysgenetic gonads or mosaicism.

**442.** Newer extracorporeal shock wave lithotriptors are associated with less patient discomfort due to increased aperture size of the shock wave generation/focusing system. This design change also produces a:

A) smaller focal volume.
B) lower focal pressure.
C) larger focal volume.
D) higher focal pressure.
E) shorter rise time.

**Correct Answer** **A**

**Explanation** A reduction in the focal volume is a geometric result of enlarging the aperture of the shock wave generator. Piezoelectric lithotriptors cause little pain, but have a small focal volume and high focal pressure. The method of shock wave generation determines the rise time. Electrohydraulic shock waves have shorter rise times than piezoelectric shock waves. The higher retreatment rates associated with newer lithotriptors are, in part, due to the smaller focal volume. Accurate placement of the stone in the focus is critical with these lithotriptors.

**443.** A 24-year-old asymptomatic man is referred for evaluation of genital warts because his sexual partner was found to have a lesion on routine pelvic exam. Physical examination does not reveal any gross lesions on the genitalia or perineum. However, magnified penile surface scanning reveals aceto-white positive lesions on the penile shaft. The best treatment is:

A) observation.
B) topical trichloroacetic acid.
C) topical podophyllin.
D) interferon injection.
E) CO<sub>2</sub> laser fulguration.

**Correct Answer** **A**

**Explanation** Penile condyloma are frequently found in the sexual partners of patients with active disease. In general these lesions are benign except for the association of subtypes 16, 18, and 31 with cervical dysplasia and possibly penile cancer. Subtypes 6 and 11 are benign. Treatment of these lesions with either topical agents or fulguration is successful at eradicating the visible lesion but has a recurrence rate of approximately 90% within one year. Therefore, the best treatment of an asymptomatic patient without lesions and a benign subtype is observation only.

**444.** The most common cause of a narrowed, pipe-stem deformity of an ileal conduit is:

A) chronic urinary infection.
B) vascular insufficiency.
C) extrinsic obstruction.
D) regional enteritis.
E) parastomal hernia.

**Correct Answer** **B**

**Explanation** A pipe-stem deformity of an ileal conduit is due to vascular insufficiency, usually caused by an inadequate mesenteric blood supply. This leads to strictured areas along the course of the loop, resulting in a thin, noncompliant loop with decreased peristalsis and propulsion of urine. Upper tract obstruction and deterioration can be the end product of this process. Treatment usually requires replacement of the entire conduit.

**445.** Cystine stones form primarily as a consequence of:

A) increased concentration of urinary cystine.
B) a deficiency of substances that inhibit crystal growth.
C) an excess of substances that promote crystal growth.
D) increased binding of cystine by matrix (mucoproteins).
E) excessive urinary acidity.

**Correct Answer** **A**

**Explanation** Cystine stone formation is the only type of metabolic stone disease which can be determined specifically based on the urinary concentration of a specific ionic constituent. In most patients, once the urinary concentration of cystine increases to more than 200 mg of cystine per liter of urine, cystine crystals will precipitate out of solution with subsequent formation of cystine calculi. If one can reduce the cystine concentration below 200 mg per liter, either with increased urinary volume or reductions in cystine excretion, cystine stone disease can be prevented. However, a high percentage of patients with cystine stone disease will also have concurrent metabolic abnormalities and appropriate metabolic evaluation with subsequent treatment should also be instituted.

**446.** A 65-year-old man with bladder outlet obstruction secondary to BPH and a history of a CVA undergoes a TURP. He continues to experience urgency and frequency three months postoperatively. The most likely cause of his symptoms is:

A) detrusor instability.
B) urethral stricture.
C) bladder neck contracture.
D) UTI.
E) residual obstruction.

**Correct Answer** **A**

**Explanation** An 'overactive bladder' can result from a cerebrovascular accident, the resulting symptoms of which may not improve after relief of outlet obstruction. These patients will frequently respond to anticholinergic medication.

**447.** A 40-year-old woman undergoes bilateral adrenalectomy for Cushing's disease with complete resolution of her symptoms. Replacement therapy with cortisone and fludrocortisone is instituted. Three years later, she complains of visual disturbances and is noted to have skin hyperpigmentation. The most likely explanation is:

A) Addison's disease.
B) pituitary adenoma.
C) excessive cortisone replacement.
D) excessive ACTH production.
E) ectopic melanocyte-stimulating hormone secretion.

**Correct Answer** **B**

**Explanation** Ten-20% of patients who have bilateral adrenalectomy for Cushing's Syndrome later develop pituitary tumors which are almost always chromophobe adenomas (Nelson's syndrome). Progressive hyperpigmentation, due to melanocyte stimulating hormone release by corticotropic releasing hormone, headaches, and visual disturbances are due to the expanding adenoma that is shown by skull x-rays or CT scans of the sella turcica. Pituitary basophilic adenoma that was initially postulated by Cushing as causing the syndrome named for him has, in fact, rarely been a factor.

**448.** Patients with hyperparathyroidism can best be distinguished from those with renal or absorptive hypercalciuria by measurement of:

A) serum calcium.
B) fasting urine calcium.
C) post-oral calcium load urine calcium.
D) fasting urine cyclic AMP.
E) post-oral calcium load urine cyclic AMP.

**Correct Answer** **A**

**Explanation** Hyperparathyroidism produces a combination of absorptive, renal, and bony calcium defects. There is hyperabsorption of calcium through the gut with increased reabsorption of bone and an increased renal loss of calcium due to hypercalcemia in spite of increased reabsorption. The most significant diagnostic difference, other than elevated serum calcium, that separates patients with hyperparathyroidism from those with absorptive hypercalciuria or renal leak hypercalciuria is a moderate increase in parathyroid hormone levels.

**449.** To know the yearly total number of newly-diagnosed prostate cancer cases in the United States, one would need to know the:

A) prevalence.
B) incidence.
C) lead-time bias.
D) positive predictive value.
E) length-time bias.

**Correct Answer** **B**

**Explanation** Incidence is a direct estimate of the probability of risk of developing a disease during a specific time. In prostate cancer, there were approximately 180,000 new cases diagnosed in 1999. This does not necessarily correlate with clinical or biological significance. Prevalence defines the incidence multiplied by the duration of observation. In prostate cancer, it refers to the number of men who actually have the disease at any particular point in time rather than how many will develop it during a particular time period.

**450.** The best technique for penile nerve block prior to epispadias repair is:

A) raise a wheal around the base.
B) midline deep infiltration inferior to the inner symphyseal band.
C) raise a wheal around the base and midline deep infiltration.
D) deep infiltration at 10 and 2 o'clock.
E) deep infiltration at 10 and 2 o'clock and a wheal around the base.

**Correct Answer** **E**

**Explanation** In epispadias the neurovascular bundle is not midline but displaced laterally at about the 10 and 2 o'clock positions. A local penile block usually requires the deep penile nerves to be blocked to give adequate glans anesthesia and a wheal at the base of the penis to block the nerves of the skin of the shaft.

**451.** A 30-year-old man with an HIV infection is evaluated for frequency, urgency, and dysuria. The most likely cause of these symptoms is:

A) bacterial cystitis.
B) candida cystitis.
C) mycobacterial cystitis.
D) bladder hyperreflexia.
E) bladder hyporeflexia.

**Correct Answer** **D**

**Explanation** Lower tract urological disorders in human immunodeficiency virus (HIV) infections are due to infections, obstruction, or neurological causes. Approximately 60% of voiding disorders are due to neurological abnormalities, e.g., encephalitis, cerebral toxoplasmosis, etc. Neurogenic voiding dysfunction portends a poor prognosis.

**452.** A five-day-old boy has vomiting and dehydration. His serum CO<sub>2</sub> is 12 mEq/l, K 5.5 mEq/l, and creatinine 2.2 mg/dl. A VCUG demonstrates posterior urethral valves and bilateral Grade IV/V vesicoureteral reflux. The best initial management is:

A) percutaneous cystostomy.
B) percutaneous nephrostomies.
C) valve ablation.
D) urethral catheter drainage.
E) cutaneous vesicostomy.

**Correct Answer** **D**

**Explanation** The management of the infant with posterior urethral valves depends somewhat on the severity of the obstruction and the degree of any renal dysplasia present. The main problems arise in management of the infant with severe obstruction and compromised renal function with dehydration, acidosis, and sepsis. Initially, a small infant feeding tube, placed transurethrally, can provide bladder drainage. If initial bladder drainage does not result in satisfactory clinical improvement and the neonate remains medically unstable, temporary supravesical diversion should be considered. Non-intubated, cutaneous pyelostomies provide the most appropriate direct, non-obstructed form of supravesical urinary diversion, with the fewest long-term sequelae.

**453.** Prostate specific antigen is:

A) a protease inhibitor.
B) a serine protease.
C) complexed primarily to trypsin.
D) expressed primarily by prostatic stromal cells.
E) expressed exclusively by prostatic epithelial cells.

**Correct Answer** **B**

**Explanation** Prostate specific antigen (PSA) is a serine protease that liquefies the ejaculate coagulated by degrading seminal proteins. Protease inhibitors are used to treat HIV. PSA is complexed primarily to alpha-1 antichymotrypsin and is expressed primarily, but not exclusively, in prostatic epithelial cells. PSA is expressed in small amounts by cells of cloacal origin.

**454.** During placement of malleable prosthesis, a distal urethral perforation occurs. The contralateral cylinder has not been placed. The best management is:

A) place urethral catheter and complete the implantation.
B) repair urethra and implant the contralateral prosthesis.
C) repair urethra and place a suprapubic tube only.
D) repair urethra, proceed with implantation, and place a suprapubic tube.
E) place urethral catheter and terminate the procedure.

**Correct Answer** **E**

**Explanation** If urethral perforation occurs during dilation, it is best to abandon the procedure, divert the urine with a urethral catheter, and return on a later date. If the contralateral prosthesis has already been placed and there is no septal perforation, then it may be left in place. The urine should be diverted. Urethral repair would be difficult and is unnecessary.

**455.** A three-year-old girl undergoing cardiac catheterization for coarctation of the aorta is found to have a horseshoe kidney. Chromosomal studies will likely show:

A) XO/XX.
B) XXY.
C) XO.
D) trisomy 18.
E) trisomy 21.

**Correct Answer** **C**

**Explanation** The association of coarctation of the aorta and horseshoe kidney is indicative of Turner's syndrome. Horseshoe kidneys are reported to occur in as many as 10% of females with Turner's syndrome. The karyotype would therefore be 46 XO. Other associated conditions can include short stature, webbed-neck, aortic valve disease, VSD, ASD, and renal duplication.

**456.** The effect of testosterone on prostatic cells requires:

A) 5-alpha-reductase.
B) estradiol.
C) steroid-binding protein.
D) dehydroepiandrosterone.
E) aromatase.

**Correct Answer** **A**

**Explanation** The major intracellular androgen in prostatic cells is dihydrotestosterone (DHT). This is formed by the action of 5-alpha-reductase on free testosterone which gains access to prostatic cells by diffusion from plasma. DHT has an important permissive role in the development of BPH. Finasteride is the first clinically available 5-alpha-reductase inhibitor used to treat BPH.

**457.** A 50-year-old man with end-stage polycystic kidney disease is on chronic hemodialysis. His pre-dialysis potassium is consistently in excess of 5.6 mEq/l. He is dialyzed three times per week for 4-1/2 hours per treatment. The most likely cause of his hyperkalemia is:

A) dietary indiscretion.
B) chronic alkalosis.
C) gastrointestinal bleeding.
D) inadequate dialysis.
E) adrenal insufficiency.

**Correct Answer** **A**

**Explanation** Hyperkalemia is usually not a problem for patients with chronic renal failure. Even end-stage kidneys are capable of some potassium excretion, and significant amounts of potassium may be lost via the intestinal tract. Potassium is restricted in a chronic renal failure diet and the associated protein restriction also curtails potassium intake. While all of the answers are possibilities, excessive intake of potassium is the most common cause of hyperkalemia.

**458.** A seven-year-old myelomeningocele patient has failed anticholinergic therapy and clean intermittent catheterization for a non-compliant neurogenic bladder. The patient undergoes a mechanical bowel prep and receives perioperative antibiotics. Forty-five minutes after starting an enterocystoplasty, he has acute, severe hypotension. The most likely cause is:

A) dehydration secondary to bowel prep.
B) sepsis.
C) latex allergy.
D) antibiotic allergy.
E) unrecognized vena caval compression.

**Correct Answer** **C**

**Explanation** Dehydration would usually present at the time of induction of anesthesia. Although sepsis is possible, it is unlikely to be acute. Unrecognized bleeding or pressure on the vena cava are unlikely given the operative exposure necessary. Increasing numbers of patients with myelodysplasia are allergic to latex. Latex precautions should be considered in all spina bifida patients.

**459.** A 55-year-old man has fever and progressive irritative urinary symptoms. A urine culture is sterile. He fails to respond to intravenous antibiotics. TRUS demonstrates septated hypoechoic regions in the prostate. The largest hypoechoic area measures 3 x 5 cm. Optimal treatment is:

A) transperineal drainage.
B) transrectal drainage.
C) transurethral unroofing.
D) transrectal aspiration for culture.
E) oral antifungal therapy.

**Correct Answer** **C**

**Explanation** Prostatic abscess is characterized by hypoechoic regions or cavities on TRUS. Initial urinary cultures are frequently negative and intraoperative cultures are necessary. Transurethral unroofing of the abscess is the recommended treatment of choice for those who fail to respond to I.V. antibiotics.

**460.** Phosphodiesterase inhibitors cause penile smooth muscle relaxation by inhibiting:

A) calmodulin binding.
B) production of cGMP.
C) production of cAMP.
D) degradation of phospholipase C.
E) degradation of cGMP.

**Correct Answer** **E**

**Explanation** cGMP is a second messenger for nitric oxide (NO) that activates protein kinases promoting smooth muscle relaxation. cGMP is degraded to GMP by phosphodiesterase. A phosphodiesterase inhibitor potentiates the effect of cGMP. Ca++ binding to calmodulin is the first step in the initiation of smooth muscle contraction which activates myosin-light chain kinase.

**461.** A 24-year-old man has acute severe left flank pain. Urinalysis is normal. He denies a history of urinary stone disease or recent trauma. The next step is:

A) reassurance.
B) non-contrast helical CT scan.
C) abdominal ultrasonography.
D) IVP.
E) MRI Scan.

**Correct Answer** **B**

**Explanation** A clinical history of acute renal colic should not be dismissed due to a normal urinalysis without evidence of microhematuria. A substantial number of patients with acute renal colic will present with a normal urinalysis. Non-contrast CT is the study of choice to confirm the diagnosis of nephro- or ureterolithiasis. Additionally, CT imaging can exclude other peritoneal or retroperitoneal pathology. IVP with tomography can substantially increase radiation dosage to the patient and frequently does not image ureters in their entirety. Optimal IVP requires a reasonable bowel prep and experienced technicians and radiologists; frequently neither of which are available during evening hours. Abdominal ultrasonography can evaluate kidneys for stone disease however, it is consistently a poor modality to image non-dilated ureters. Reassurance without confirming a diagnosis may be misleading. MRI is a poor imaging modality to assess for urinary stone disease.

**462.** Detumescence is mediated by the:

A) cavernous nerves.
B) sympathetic nervous system.
C) parasympathetic nervous system.
D) nervi erigentes (S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub>).
E) pudendal nerves.

**Correct Answer** **B**

**Explanation** Detumescence is caused by a discharge of the sympathetic nervous system to the cavernous muscle. The pudendal nerves (peripheral nervous system) do not affect the cavernosa directly. The parasympathetic nerves, which include S2, S3, S4, the nervi erigentes, and cavernous nerves, do not cause detumescence but tumescence.

**463.** A 16-year-old girl with known inflammatory bowel disease develops disabling frequency, urgency, and nocturia. She has recurrent E. coli UTIs. Ultrasound shows mildly dilated upper tracts bilaterally. A CT scan shows a thickened bladder wall. Cystoscopy reveals an inflamed trigone without discrete evidence of a fistula. The most important form of therapy for her is:

A) intravenous antibiotics.
B) temporary diverting colostomy.
C) a temporary suprapubic cystostomy.
D) medical management of the bowel disease.
E) exploratory laparotomy with appropriate bowel resection.

**Correct Answer** **D**

**Explanation** The most common urologic complication of inflammatory bowel disease is cystitis. This can happen with or without an actual enteric-urinary fistula. Management should be directed at the inflammatory bowel disease and should be managed non-surgically if at all possible.

**464.** The first event to occur with normal micturition is:

A) relaxation of the prostate and prostatic capsule.
B) opening of the bladder neck.
C) relaxation of the external striated sphincter.
D) contraction of the bladder body.
E) contraction of the bladder base.

**Correct Answer** **C**

**Explanation** The first recordable event to occur with normal micturition is relaxation of the external striated sphincter. This is followed by a coordinated contraction of the bladder and opening of the bladder neck.

**465.** A 74-year-old woman has symptomatic stress incontinence and detrusor instability, but would like to avoid surgery. The best pharmacologic approach is:

A) oxybutynin.
B) tolterodine.
C) imipramine.
D) terazosin.
E) ephedrine.

**Correct Answer** **C**

**Explanation** Imipramine has both a strong direct inhibitory action on bladder smooth muscle and a stimulant effect on the bladder outlet. The net result is that it promotes urinary storage by preventing detrusor instability and increasing urethral resistance. Phenylpropanolamine, phenylephrine, and ephedrine are sympathomimetic agents. The net result of alpha-adrenergic stimulation is an increase in the resting urethral pressure, which on a theoretic basis should enhance continence due to sphincter abnormalities, but there is no effect on detrusor instability. Oxybutynin and tolterodine have anticholinergic and smooth muscle relaxant effects and have no role in the treatment of stress incontinence. Terazosin would exacerbate this patient's stress incontinence.

**466.** A 30-year-old man has recurrent nephrolithiasis. The stones are composed of guaifenesin and ephedrine. The next step is discontinuation of these medications and:

A) psychological counseling.
B) potassium citrate.
C) hydrochlorothiazide.
D) allopurinol.
E) sodium bicarbonate.

**Correct Answer** **A**

**Explanation** These stones develop in patients who consume large quantities of preparations containing guaifenesin and ephedrine; mainly for the stimulant properties of the latter drug. The stones are radiolucent on standard x-ray imaging studies but appear radiodense on computed tomography. A high percentage of these patients have a history of substance abuse. Therefore, psychological counseling is recommended.

**467.** Renovascular hypertension which is likely to respond to angiographic or surgical intervention is usually characterized by:

A) marked elevation in plasma renin values.

B) elevation of renal vein over inferior vena caval concentrations of renin by at least 25%.

C) elevation of ipsilateral renal vein renin by at least 50% over peripheral and contralateral renal vein renin.

D) elevation of ipsilateral renal vein renin by 50% over peripheral plasma renin, and by 25% over the contralateral renal vein renin.

E) marked elevation of ipsilateral and contralateral renal vein renin as well as peripheral plasma renin.

**Correct Answer** **C**

**Explanation** The response of renovascular hypertension to surgery or angiographic intervention depends upon the type of lesion and its location. Renin is a mediating substance for renovascular hypertension and a search for its origin in helpful. Significantly elevated renin from one renal vein and not the other leads to localization of a candidate for intervention. Further evaluation by imaging and provocative studies involving ACE inhibitors may also confirm the diagnosis and help decide whether a surgical cure is necessary.

**468.** A 68-year-old man has left flank pain. IVP demonstrates a normal right kidney but non-function on the left. CT scan reveals an 8 cm left renal mass in the hilar region, and a suggestion of a renal vein thrombus. Chest x-ray and blood chemistries are normal. The next step is:

A) inferior vena cavogram.

B) MRI scan.

C) angiogram.

D) retrograde pyelogram.

E) transesophageal echocardiogram.

**Correct Answer** **B**

**Explanation** The presentation in this patient is most consistent with renal vein invasion and obstruction from a renal cell carcinoma. Prior to radial nephrectomy, it is essential to know the limit of the thrombus and therefore MRI is the most appropriate next step.

**469.** Two years after bilateral ureteroneocystostomies for vesicoureteral reflux, a nine-year-old girl has sepsis and vomiting. The BUN is 80 mg/dl, serum creatinine 2.9 mg/dl, CO<sub>2</sub> 12 mEq/l, and K 6.5 mEq/l. Her renal ultrasound shows severe bilateral hydroureteronephrosis. VCUG is normal. The next step is:

A) cystoscopy and ureteral catheterization.
B) diuretic renal scan.
C) bilateral percutaneous nephrostomies.
D) cutaneous vesicostomy.
E) bilateral loop cutaneous ureterostomies.

**Correct Answer** **C**

**Explanation** This girl is likely to have post-operative ureteral stenosis with azotemia. Decompression will be necessary to medically stabilize her before reconstruction This is most reliably accomplished by percutaneous nephrostomies which will not interfere with ultimate surgical revision of the ureterovesical anastomosis.

**470.** Two years ago, a 60-year-old man underwent distal ureterectomy and ureteroneocystostomy for Stage Ta (O), Grade II transitional cell carcinoma of the ureter. A recent IVP is normal. Surveillance cystoscopy reveals a friable lesion near the new ureteral orifice managed with transurethral resection. Pathology reveals nephrogenic adenoma. The next step is:

A) partial cystectomy with ureteral reimplantation.
B) re-biopsy with random bladder biopsies.
C) intravesical BCG.
D) periodic cystoscopy.
E) suppressive antibiotic therapy.

**Correct Answer** **D**

**Explanation** Nephrogenic adenoma is an unusual lesion which can mimic papillary transitional cell carcinoma in appearance. Most appear to be associated with local irritation and one series reported a higher incidence in patients who underwent renal transplantation and ureteral reimplantation. No treatment other than endoscopic resection is required.

**471.** A 58-year-old obese man has 400 ml of bile-stained fluid coming from his drain two days following transperitoneal laparoscopic unroofing of a large right renal cyst. He is afebrile and his bowel sounds are normal. The leakage persists over the next five days despite nasogastric suction. KUB and upright abdominal x-rays are normal. The next step is:

A) feeding jejunostomy tube.
B) laparotomy.
C) parenteral nutrition.
D) somatostatin.
E) small bowel suction (Kantor) tube.

**Correct Answer** **C**

**Explanation** Immediate reoperation for fistula closure is not indicated as most fistulae heal with parenteral nutrition. Parenteral nutrition has significantly improved the mortality and prognosis of patients with enterocutaneous fistulae and has not only increased the rate of spontaneous fistula closure but also improved nutritional status of patients needing repeated operations.

**472.** The vein draining into the dorsal (posterior) aspect of the left renal vein is the:

A) lumbar.
B) gonadal.
C) phrenic.
D) adrenal.
E) azygos.

**Correct Answer** **A**

**Explanation** While the gonadal and adrenal veins can be easily appreciated early in the dissection, often large lumbar vessels draining posteriorly from the left renal vein require special double ligature and division. These become manifest in the course of complete mobilization of the vein an effort to give the transplant surgeon maximum length of left renal vein.

**473.** One week following partial nephrectomy for a renal tumor, there is 500 cc per day of urine from a flank drain. A retrograde pyelogram demonstrates a filling defect in the upper ureter causing partial obstruction. The best management is:

A) observation.
B) re-exploration of the kidney.
C) ureteroscopy.
D) percutaneous nephrostomy.
E) internal ureteral stent plus urethral catheter.

**Correct Answer** **E**

**Explanation** Urinary fistula is the most common complication after partial nephrectomy. In the absence of obstruction of the collecting system most fistulas will close spontaneously within several weeks and do not require further therapy. An obstruction of the collecting system, typically due to a clot, may delay or prevent fistula closure and should be treated to promote closure. The best approach is placement of a double J ureteral stent and a Foley catheter - placement of a stent alone will permit urine from the opposite kidney to reflux up the stent and may actually increase the fistula output. Placement of the Foley catheter will prevent this from occurring. An internal stent is less invasive than a percutaneous nephrostomy and more comfortable for the patient. Early re-exploration of a kidney after partial nephrectomy is rarely indicated and usually results in loss of the renal unit.

**474.** A 75-year-old woman has recurrent cystitis. Physical examination demonstrates a Grade I cystocele and atrophic vaginitis. A postvoid residual is 45 cc. IVP and VCUG are normal. The best management is:

A) vaginal pessary.
B) oral estrogen.
C) intravaginal estrogen.
D) cranberry juice.
E) prophylactic antibiotics.

**Correct Answer** **C**

**Explanation** The female lower urinary tract contains a significant number of estrogen receptors. After menopause, diminished levels of glycogen are produced as a result of decreased estrogen production. This alters the vaginal flora resulting in a decrease of the normally dominant lactobacilli. Vaginal pH then rises and can result in overgrowth of enteric organisms. As a result there may be frequent ascending urinary tract infections. In a randomized double blind study intravaginal estriol decreased the incidence of urinary infection in post menopausal women with recurrent infections. Although oral estrogens and cranberry juice have been used, they have not been consistently shown to decrease the rate of recurrent infections. Additionally, oral estrogens have significant systemic effects.

**475.** A 54-year-old woman who underwent radiation therapy for cervical cancer two years ago has microscopic hematuria. Transurethral resection of a lesion 2 cm above the left ureteral orifice reveals an inverted papilloma. Three days post-operatively, she develops a vesicovaginal fistula. The best treatment is:

A) immediate transvaginal repair.
B) transvaginal repair in six months.
C) immediate transabdominal repair.
D) transabdominal repair in six months.
E) urinary diversion.

**Correct Answer** **C**

**Explanation** In a woman with no evidence of abscess formation or a fluid collection, there is little need to wait an extended period of time before fistula repair. The abdominal approach provides better access to a radiation induced fistula and allows an omental pedicle graft to be interposed between the bladder and vaginal wall. Obliteration of dead space, good bladder drainage, control of infection and interposition of healthy tissue are critical elements to fistula closure.

**476.** A two-year-old boy has a right radical orchiectomy for yolk sac tumor of the testis. The preoperative elevated level of alpha-fetoprotein returns to normal, and CT scan of the chest and abdomen are normal. In addition to long-term follow up with periodic metastatic work-up, appropriate management includes:

A) retroperitoneal lymphadenectomy.
B) retroperitoneal lymphadenectomy and combination chemotherapy for six months.
C) actinomycin D and vincristine for six months.
D) bleomycin, etoposide, and platinum for three months.
E) surveillance.

**Correct Answer** **E**

**Explanation** Stage I prepubertal yolk sac testis tumors are best treated initially by orchiectomy alone, with periodic follow-up for metastatic disease. There is no advantage to early retroperitoneal lymphadenectomy and/or prophylactic chemotherapy.

**477.** A four-year-old boy with previously treated urethral valves and hydronephrosis has nocturnal enuresis and some daytime wetness. A 24-hour urine collection shows a volume of 1800 ml. The best treatment is:

A) vasopressin.
B) salt restriction.
C) postvoid catheterization.
D) decrease oral fluid intake.
E) increase frequency of voiding.

**Correct Answer** **E**

**Explanation** Patients with a concentrating defect related to early obstruction (nephrogenic diabetes insipidus) will not be able to significantly decrease urine volume with mild fluid restriction. Lasix and salt restrictions as well will not usually result in reduction in urine volume. These patients, by definition, will not respond to vasopressin. Postvoid catheterizations would be useful only if incomplete voiding is suspected (which is sometimes the case with the previously resected valve patients). Of the choices offered, more frequent voidings may result in resolution of both the daytime and nighttime wetting. It may be necessary, however, for this young man to get up once or twice per night. The character of this bladder will have major impact on therapy. If the bladder has reduced compliance with a reduced volume, anticholinergic therapy should be considered.

**478.** A 55-year-old woman has unilateral hydronephrosis on a routine follow-up IVP two years after radical cystectomy and refluxing colon conduit diversion for a Stage T2, Grade III transitional cell carcinoma of the bladder. She received pelvic irradiation 12 years ago for cervical carcinoma. The most appropriate initial study to evaluate her is:

A) CT scan of the abdomen and pelvis.
B) urinary cytology.
C) loop endoscopy.
D) antegrade nephrostogram.
E) balloon dilation.

**Correct Answer** **B**

**Explanation** Early hydronephrosis in this patient suggests recurrent tumor. Urinary cytology from the conduit will be positive with a high grade tumor in greater than 80% of cases. If the cytology is positive, then a CT of the abdomen and pelvis with 5 mm cuts would be the next most appropriate study. Loopogram, loop endoscopy, and percutaneous nephrostomy could be performed later if the former two studies were inconclusive.

**479.** A 22-year-old woman has a blood pressure of 160/110 mm Hg. Her serum potassium is 2.4 mEq/l while her other serum electrolytes are normal. CT scan demonstrates a 2 cm peripheral renal mass with a normal contralateral kidney. Plasma renin activity is 6.4 (normal is 0.5-1.6) ng/ml/hr. The next step is:

A) renal angiography.
B) renal venous renin sampling.
C) captopril renogram.
D) radical nephrectomy.
E) partial nephrectomy.

**Correct Answer** **E**

**Explanation** Reninomas are rare renal tumors associated with hypertension, hypokalemia, and a solid small renal mass. The critical test is plasma renin activity which is usually extremely high. Almost all are shown on CT scan as a hypodense mass, which is hypovascular. In most cases it is not necessary to control the renal pedicle and an arteriogram is not mandatory. The patient should be treated with nephron sparing surgery, i.e. resection or partial nephrectomy because these tumors are benign in nature.

**480.** A 64-year-old woman underwent a Marshall-Marchetti-Krantz urethropexy five years ago and a transvaginal urethropexy one year ago, but still has severe urinary incontinence. She leaks with coughing and sneezing, and also without any physical activity. She denies urge incontinence. The best diagnostic test is:

A) urethral pressure profile.
B) videourodynamics.
C) cystometry.
D) VCUG.
E) CMG-EMG.

**Correct Answer** **B**

**Explanation** Although it can be argued that not all women initially presenting with urinary incontinence need urodynamics, few deny the need for in-depth testing after failed surgeries. A CMG or cystogram alone offer limited information. Only videourodynamics can ascertain whether involuntary contractions are present, elevated voiding pressures suggestive of obstruction, and whether recurrent urethral hypermobility exists. An abdominal (Valsalva) leak point pressure would also be performed to ascertain whether intrinsic sphincter deficiency exists. A urethral pressure profile alone can not assess sphincter function.

**481.** A 32-year-old woman complains of a malodorous fishy vaginal discharge. She has a single male partner and uses an intrauterine device for contraception. The next step is:

A) remove intrauterine device.
B) metronidazole for patient.
C) metronidazole for patient and partner.
D) ciprofloxacin for patient.
E) ciprofloxacin for patient and partner.

**Correct Answer** **B**

**Explanation** Bacterial vaginosis results from an alteration of normal vaginal flora with a predominance of Lactobacillus species and high concentrations of anaerobic bacteria. Diagnosis can be confirmed with identification of clue cells, a homogenous vaginal discharge, a vaginal pH > 4.5, and a malodorous fishy vaginal discharge. It is more prevalent in lesbians. Risk factors may include multiple sexual partners, a new sexual partner, use of an intrauterine device, and douching. Treating the patient is as effective as treating the patient and partner. Symptoms may recur in 1/3 of patients after treatment. Metronidazole is the treatment of choice.

**482.** Which type of urinary tract reconstruction is most likely to be associated with the following serum electrolyte abnormalities: sodium 115 mEq/l, chloride 85 mEq/l, potassium 6.2 mEq/l, bicarbonate 15 mEq/l:

A) orthotopic ileal bladder.
B) gastrocystoplasty.
C) jejunal conduit.
D) ureterosigmoidostomy.
E) sigmoid colon conduit.

**Correct Answer** **C**

**Explanation** Jejunal diversion results in a hyponatremic, hypochloremic, hyperkalemic state which is due to the high permeability of the jejunum to fluid and electrolytes. Diversions using bowel distal to the jejunum are associated with hyperchloremic metabolic acidosis. Patients with gastrocystoplasty will be more likely to have a metabolic alkalosis.

**483.** The optimal tissue for early coverage of the perineum following an avulsion skin injury is a(n):

A) island skin flap.
B) musculocutaneous flap.
C) full thickness skin graft.
D) split thickness skin graft.
E) dermal graft.

**Correct Answer** **D**

**Explanation** A split thickness skin graft takes much more readily than a full thickness skin graft or a dermal graft because capillary ingrowth into the cutis graft is more rapid. Skin flaps and musculocutaneous flaps have no role in the acute management of avulsion injuries.

**484.** Which of the following is a promoter of urinary stone crystallization:

A) glycosaminoglycans.
B) bikunin.
C) magnesium.
D) matrix.
E) pyrophosphate.

**Correct Answer** **D**

**Explanation** Factors that determine kidney stone formation include supersaturation, inhibitors and promoters of crystallization, and intrarenal anatomy. Promoters are matrix and Tamm-Horsfall protein whereas inhibitors are citrate, magnesium, pyrophosphate, bikunin, glycosaminoglycans, and osteopontin.

**485.** A 35-year-old man has a serum creatinine of 15 mg/dl and a serum potassium of 7.5 mEq/l. Electrocardiogram shows peaked T waves and a widened QRS complex. The most appropriate initial treatment of his hyperkalemia is:

A) hemodialysis.
B) Kayexalate enema.
C) intravenous sodium bicarbonate and calcium gluconate.
D) intravenous concentrated glucose and regular insulin in the same infusion.
E) intravenous concentrated glucose and regular insulin in separate infusions.

**Correct Answer** **C**

**Explanation** Most (99%) of total body potassium is located within cells. Extracellular potassium is closely regulated to maintain resting membrane potentials that are critical to nerve and muscle function. Potassium is secreted by the distal convoluted tubule and collecting duct. When this mechanism is impaired in renal failure, hyperkalemia (plasma K in excess of 5.3 mEq/l) occurs. This patient is nearing a crisis in terms of cardiac function. Calcium gluconate immediately but transiently mitigates the potassium effect. Sodium bicarbonate lowers plasma K+ concentration within an hour. Hemodialysis and Kayexalate cannot be initiated as quickly. Insulin and glucose also take 30-60 minutes to work.

**486.** A 42-year-old man is seen for prostate evaluation. His paternal grandfather died of prostate cancer at age 62. Digital rectal examination is normal. His PSA is 3.5 with a free to total ratio of 20%. The next step is:

A) transrectal ultrasonography.
B) yearly PSA and DRE beginning at age 50.
C) ultrasound directed biopsies of the prostate.
D) antibiotic therapy for 4 weeks, then repeat PSA.
E) yearly PSA and DRE starting now.

**Correct Answer** **C**

**Explanation** Patients with first-degree relatives with prostate cancer, particularly at a young age, are at increased risk for the development of prostate cancer. A PSA of 3.5 while still within the normal range, is above normal for a 42-year-old man. Because of the total PSA and positive family history, he should undergo prostate biopsy.

**487.** A 65-year-old post-menopausal woman with decreased bone density develops her third calcium oxalate renal calculus in five years. Metabolic evaluation reveals a mildly elevated urinary calcium after calcium loading, consistent with Type I absorptive hypercalciuria. The most appropriate treatment is:

A) sodium cellulose phosphate.
B) orthophosphate.
C) hydrochlorothiazide.
D) potassium citrate.
E) magnesium oxide.

**Correct Answer** **C**

**Explanation** Sodium cellulose phosphate can restore normal calcium excretion in those with absorptive hypercalciuria. However, it can lead to a negative calcium balance. Thiazides are appropriate treatment for those with mild to moderate absorptive hypercalciuria and those at an increased risk of bone disease such as post-menopausal women and growing children. Thiazide therapy induces an increase in bone density. Thiazides may lose their hypocalciuric effect after two to four years, and patients may be switched to sodium cellulose phosphate for a short period of time. Orthophosphates are indicated for the management of absorptive hypercalciuria, Type III, where a renal leak of phosphate is thought to stimulate 1,25-(OH)<sub>2</sub>D synthesis. Orthophosphates inhibit this synthesis.

**488.** A five-year-old girl has developed daytime wetting and is still wet at night. She has had two UTIs with dysuria and frequency. Her renal ultrasound shows mild-moderate bilateral hydronephrosis. She has a red birthmark on her lower spine, just above the gluteal cleft. The test most likely to identify the cause of her wetting is:

A) VCUG.
B) MRI scan.
C) cystoscopy.
D) MAG-3 diuretic renogram.
E) radionuclide cystogram.

**Correct Answer** **B**

**Explanation** This girl has secondary incontinence with hydronephrosis. The dermal-vascular malformation of her lower spine raises the suspicion of a spinal cord problem, most likely spinal cord tethering leading to neurogenic bladder dysfunction. An MRI is most likely to yield the underlying cause of her wetting. A VCUG is also needed to rule out reflux and assess bladder emptying, but this is unlikely to determine the cause of her wetting.

**489.** A 40-year-old man has grand mal seizures, gross hematuria, and bilateral flank masses. His blood pressure is 180/120 mm Hg. The patient is mentally retarded. An IVP reveals enlarged kidneys with calyceal deformities bilaterally. The BUN and serum creatinine are normal. The most likely diagnosis is:

A) autosomal dominant polycystic kidney disease.
B) von Hippel-Lindau disease.
C) tuberous sclerosis.
D) Sturge-Webber syndrome.
E) bilateral renal cell carcinoma with cerebral metastases.

**Correct Answer** **C**

**Explanation** Tuberous sclerosis is classically described as a triad consisting of seizures (80% of cases), mental retardation (60% of cases) and adenoma sebaceum (75% of cases). The kidneys of these patients may have cysts, angiomyolipomas, or both. Angiomyolipomas occur in 40%-80% of patients and frequently cause hematuria.

**490.** Nephrogenic adenoma of the bladder is associated with:

A) a higher incidence in women.
B) CMV infection.
C) adenocarcinoma of the bladder.
D) cystitis cystica.
E) prior bladder injury.

**Correct Answer** **E**

**Explanation** Nephrogenic adenomas of the bladder are found usually in men and are associated with a prior history of bladder injury or chronic urinary tract infection. Nephrogenic adenomas are not associated with cystitis glandularis and associated only infrequently with bladder malignancies.

**491.** Luteinizing hormone (LH)-timed intrauterine insemination would most likely benefit subfertile couples with:

A) significant levels of male antisperm antibodies.
B) severe oligospermia.
C) cervical stenosis and low semen volume.
D) asthenospermia.
E) cervical incompetence.

**Correct Answer** **C**

**Explanation** The cervical mucus is a major barrier to sperm that are poorly motile in the oligospermic man. From a naive viewpoint it would seem that bypassing this biological barrier by intrauterine insemination would be highly successful form of therapy for the subfertile man. Motility and transport though the cervical mucus represent only a small portion of the many complex functions of which sperm must be capable for fertilization and early embryonic development to occur. Therefore, it is not surprising that intrauterine insemination is not effective universally in couples with male factor infertility. The placement of sperm directly into the uterine cavity, carefully timed to ovulation, will not compensate for acrosomal defects and abnormalities of sperm-egg interaction, which are common in men with oligospermia. Nevertheless, sperm processing and intrauterine insemination can have an appropriate role in the management of carefully selected subfertile couples. It is an ideal form of therapy for cervical factor infertility and for men with retrograde ejaculation and significant semen volume abnormalities. Men with significant levels

**492.** An otherwise healthy 62-year-old man undergoes radical cystectomy and ileal neobladder for invasive bladder cancer. Three weeks post-operatively he complains of watery stools and a cystogram demonstrates a fistula between the neobladder and small intestine. He is afebrile, has no abdominal tenderness, and there is no sign of intraperitoneal extravasation. Both the transurethral catheter and suprapubic tube irrigate freely. The best management is:

A) replace the urethral catheter with a larger catheter.
B) low residue diet.
C) percutaneous nephrostomies.
D) somatostatin.
E) operative repair.

**Correct Answer** **B**

**Explanation** Neobladder enteric fistulas occur rarely after orthotopic urinary diversion. In a healthy, nontoxic patient with no sign of abdominal sepsis a trial of nonoperative repair is indicated initially. Small fistulas may heal with simple dietary modification such as a low residue diet. Larger or persistent fistulas may require the patient to be NPO and treated with intravenous TPN. Operative repair is indicated for persistent fistulas or in the acutely ill patient.

**493.** A 45-year-old man has two days of perineal discomfort, dysuria, urinary frequency, fever, and difficulty voiding. Urinalysis reveals bacteruria and pyuria. Physical examination reveals an enlarged prostate. He has a history of four symptomatic E. coli urinary tract infections over the past year. He finished his last course of antibiotics one week ago. Before antibiotic treatment is restarted, which culture should be obtained:

A) mid-stream urine.
B) urine by suprapubic aspiration.
C) expressed prostatic fluid.
D) pre- and post-prostatic massage voided urine and prostatic fluid.
E) initial voided urine.

**Correct Answer** **A**

**Explanation** This man likely has chronic bacterial prostatitis. This is usually manifested by recurring recurrent infections with the same organism. While lower urinary tract bacterial localization is helpful in identifying the prostate as a nidus of infection if the urine is sterile, it is useless if there is bacteruria since all specimens will grow large numbers of bacteria. This man now has symptomatic bacteruria and his infection cannot be localized. If localization of the prostate is desired, the urine should be sterilized (perhaps with nitrofurantoin for three days) and then initial voided, mid-stream and post-prostatic massage urinary specimen should be obtained along with the prostatic fluid specimen.

**494.** The most important factor in maintaining continence after radical prostatectomy is preservation of the:

A) nervi erigentes.
B) bladder neck.
C) puboprostatic ligaments.
D) external sphincter.
E) levator ani.

**Correct Answer** **D**

**Explanation** While preservation of the bladder neck, nervi erigentes, and the size of the bladder neck have all been associated with continence, the only factor which is generally accepted as being related to urinary control after radical prostatectomy is preservation of the external sphincter.

**495.** In addition to bladder wall fibrosis, systemic cyclophosphamide therapy may result in:

A) chronic renal insufficiency.
B) renal papillary necrosis.
C) chronic renal hematuria.
D) transitional cell carcinoma.
E) chronic prostatitis.

**Correct Answer** **D**

**Explanation** Many series have demonstrated that patients who have received cyclophosphamide are at a significantly higher risk of developing carcinoma of the bladder. The average risk of patients who received therapy for non-Hodgkin's lymphoma was 4.5-fold higher than average. Patients who received higher doses had a 14.5-fold increased risk. A review of 12 patients with cyclophosphamide-associated bladder cancer found all to be of high grade. In this series, conservative management (TUR) was associated with a high mortality rate and long-term survival was best in patients treated with early radical cystectomy.

**496.** Furosemide (Lasix) acts primarily by inhibiting sodium reabsorption in the:

A) collecting duct.
B) proximal tubule.
C) ascending limb of Henle's loop.
D) descending limb of Henle's loop.
E) distal tubule.

**Correct Answer** **C**

**Explanation** Furosemide (Lasix) is a loop diuretic. Loop diuretics act mainly by inhibiting the Na+-K+-2Cl- cotransport system in the thick ascending limb of Henle's loop. This results in inhibiting sodium reabsorption and a solute diuresis.

**497.** A 25-year-old woman reports eight urinary tract infections in the past year, all of which are associated with lower urinary tract symptoms only. Which of the following is most likely to be a risk factor:

A) tampon use.
B) parity.
C) douching.
D) daily bicycle riding.
E) spermicide use.

**Correct Answer** **E**

**Explanation** Studies of risk factors for recurrent urinary tract infection demonstrate that spermicide use increases urinary tract infections by decreasing normal vaginal flora and decreasing vaginal pH. Several studies have demonstrated the other four choices are not common risk factors. Douching is rarely significantly increased in patients with recurrent urinary tract infections. Tampon use, parity, and exercise are not risk factors for recurrent cystitis.

**498.** Which of the following is most likely to cause painful gynecomastia:

A) leuprolide.
B) leuprolide and flutamide.
C) ketoconazole.
D) bicalutamide.
E) finasteride.

**Correct Answer** **D**

**Explanation** Breast tenderness and enlargement during hormonal therapy for prostate cancer is due to an altered ratio of serum estrogens and testosterone. Leuprolide inhibits pituitary LH release so there is no rise in serum estrogens. Ketoconazole inhibits androgen and estrogen synthesis. Bicalutamide inhibits both end organ and central androgen receptors so that both LH and androgen levels increase with loss of negative feedback inhibition.

**499.** A six-year-old boy sustains blunt abdominal trauma in a motor vehicle accident. He has tender ecchymosis on the right flank. Blood pressure is stable. His urine sediment has 10 RBC/hpf. The next step is:

A) CT scan.
B) IVP.
C) ultrasonography.
D) cystogram.
E) observation.

**Correct Answer** **A**

**Explanation** All children with suspected renal trauma and any degree of hematuria should be evaluated radiographically. In contrast, adults with gross hematuria or microscopic hematuria plus hypotension are candidates for imaging. One reason for the discrimination is that large amounts of catecholamines released in injured children may sustain blood pressure in the face of hypovolemia. The CT scan is the most useful imaging modality in this situation.

**500.** The most life-threatening electrolyte abnormality that develops during the diuretic phase of acute tubular necrosis is:

A) hyponatremia.
B) hypomagnesemia.
C) hypocalcemia.
D) hypokalemia.
E) hyperkalemia.

**Correct Answer** **D**

**Explanation** During the massive urinary sodium losses occurring during the diuresis phase of ATN, potassium is also lost resulting in life-threatening hypokalemia. During diuresis the Na+/k+ pump is overwhelmed and exchange fails to occur.

**501.** Men with a history of infertility and a low volume (0.5-1.0 ml) of noncoagulating ejaculate on semen analysis most often have:

A) retrograde ejaculation.
B) prostatic hypoplasia.
C) primary testicular failure.
D) bilateral absence of the vas.
E) panhypopituitarism.

**Correct Answer** **D**

**Explanation** The mean semen volume for normal men is 3 cc. The prostate and seminal vesicles provide more than 98% of the total volume of the ejaculate in man. Thus, very small ejaculates reflect either only prostatic fluid (with ejaculatory duct obstruction preventing seminal vesicle fluid from entering the ejaculate) or an abnormality in the physiology of these androgen-dependent organs. The seminal vesicles are responsible for the property of coagulation in the semen. Testicular failure does not affect semen volume. Men with congenital absence of the vas deferens rarely have significant volumes of seminal vesicle secretions in the ejaculate. This is a common cause of azoospermia. Vasal obstruction would not noticeably decrease the ejaculate volume. Men with retrograde ejaculation rarely have any antegrade ejaculate unless sperm are present in the antegrade semen.

**502.** A dorsal lumbotomy is most appropriate for children with:

A) failed pyeloplasty.
B) Wilms' tumor.
C) end-stage nephrosclerosis.
D) branched renal calculus.
E) mesoblastic nephroma.

**Correct Answer** **C**

**Explanation** A dorsal lumbotomy offers an excellent approach to deal with small, previously unoperated kidneys with benign disease. The kidney with end-stage nephrosclerosis provides an excellent candidate for posterior lumbotomy.

**503.** A three-year-old boy is anesthetized for a bilateral orchiopexy. Intra-operatively, his temperature is 104°F, his heart rate is 180/minute, and he is noted to have dark venous blood. Arterial blood gas determinations include pH 7.10, pO<sub>2</sub> 88, and base deficit 5.7 mEq/l. The first step in treatment is:

A) stop halothane, administer nitrous oxide, and give phenoxybenzamine.
B) hyperventilate with oxygen and give propranolol.
C) hyperventilate with oxygen and give dantrolene.
D) hyperventilate with oxygen and pack patient in ice.
E) stop halothane, administer nitrous oxide, and give atropine.

**Correct Answer** **C**

**Explanation** The patient has malignant hyperthermia. It is caused by an inherited muscle membrane disorder that results in an abnormal influx of intracellular calcium. The result is a hypermetabolic state. It is frequently seen with the use of suxamethonium and/or volatile halogenated anesthetic agents. Treatment includes stopping the inhalational anesthetic, hyperventilate with oxygen and administer Dantrolene. This has resulted in a dramatic improvement in mortality from 70% in the 1970's to 5% today.

**504.** In patients with organic erectile dysfunction, the best response to sildenafil citrate is achieved in those with:

A) vascular disease.
B) history of radical prostatectomy.
C) diabetes mellitus.
D) history of TURP.
E) spinal cord injury.

**Correct Answer** **E**

**Explanation** Improved erections with sildenafil treatment were noted in 70% of men with organic erectile dysfunction (ED) and in over 80% of men with psychogenic ED. When the response is stratified by specific disease states, the best response rates are noted in the spinal cord injury group (83%). The response rates for the other groups range from 50-70%.

**505.** The function of the testicular germinal epithelium is best evaluated by measuring the serum level of:

A) LH.
B) hCG.
C) FSH.
D) testosterone.
E) dihydrotestosterone.

**Correct Answer** **C**

**Explanation** Although the role of FSH in spermatogenesis is somewhat controversial, it is certainly safe to say that FSH levels are increased in proportion to the loss of testicular germ cells. LH and testosterone concentrations generally remain within the normal range unless there has been extremely severe testicular failure.

**506.** Marked bilateral hydronephrosis first diagnosed antenatally is now confirmed with an ultrasound in a newborn female infant. A VCUG demonstrates no reflux and a normal urethra. The infant is voiding. The next step is:

A) IVP.
B) nuclear renal scan.
C) antegrade studies.
D) bilateral retrogrades.
E) repeat ultrasound in two months.

**Correct Answer** **B**

**Explanation** In this setting, one must determine if the hydronephrosis is causing significant obstruction and if so, at what level in the urinary tract. The ultrasound may show ureteral dilation which suggests obstruction at the ureterovesical junction, but the renal scan will determine the degree of function and obstruction. The ideal timing for performing this study is during the second month of life when the GFR has increased several fold. The IVP may be useful after the first week of life, but does not provide differential renal function. Antegrade studies are not needed at this point and should not be performed prior to the less invasive MAG-3 renal scan. Bilateral retrogrades require an anesthetic and do not provide information on renal function or the degree of obstruction.

**507.** The bowel segment associated with the highest gastrointestinal potassium loss is:

A) transverse colon.
B) cecum.
C) ileum.
D) jejunum.
E) stomach.

**Correct Answer** **B**

**Explanation** It is important to know the electrolyte content of the fluid from the various bowel segments in order to replace abnormal fluid losses from these segments. The highest potassium gastrointestinal losses are from the cecum, followed by the stomach and ileum.

**508.** The primary role of the macrophage in organ or tissue rejection is:

A) production of interleukin-1.
B) production of gamma-interferon.
C) stimulation of suppressor T cells.
D) release of cytotoxic antibodies.
E) release of macrophage-stimulating lymphokines.

**Correct Answer** **A**

**Explanation** Macrophages and other antigen-presenting cells are among the first inflammatory cells entering the allograft after transplantation. In addition to presentation of donor antigen, macrophage production of interleukin-1 (IL-1) is the primary stimulant for T lymphocyte IL-2 production, which leads to proliferation of activated T cells. The immunosuppressive effects of corticosteroids in organ transplantation are principally a result of suppression of macrophage IL-1 production. Gamma interferon is produced by T cells, and macrophages do not produce cytotoxic antibodies, stimulate suppressor cells, or release lymphokines.

**509.** A 50-year-old man has abrupt onset of hypertension (185/110 mm Hg). No abdominal bruit is heard on physical examination. The serum creatinine is 1.2 mg/dl and the serum potassium is 3.3 mEg/l. The next step is:

A) ambulatory peripheral plasma renin activity.
B) aldosterone level.
C) captopril renogram.
D) renal vein renin measurements.
E) renal vein renin measurements before and after captopril.

**Correct Answer** **C**

**Explanation** The young age, acute onset of the hypertension and hypokalemia are all high risk factors for renovascular hypertension (RVH). Based upon these risk factors, peripheral renin activity measurement is not necessary to pursue the diagnosis of RVH. An elevated aldosterone may be secondary to increasing levels of renin or primary hyperaldosteronism. The next step is a captopril renogram. If positive, renal vein renins +/- captopril are measured.

**510.** A 60-year-old woman develops vaginal leakage of urine and is found to have a ureterovaginal fistula five days after an abdominal hysterectomy. A retrograde ureterogram demonstrates the fistula 2-3 cm above the bladder. Attempts at retrograde and antegrade passage of a ureteral stent are unsuccessful. The most appropriate management is:

A) observation.
B) ureteroneocystostomy.
C) ureteroureterostomy.
D) percutaneous nephrostomy.
E) bladder flap ureterovesicoplasty.

**Correct Answer** **B**

**Explanation** In a healthy patient, fistula repair may be undertaken early. As all attempts at ureteral catheterization have been unsuccessful, the fistula will not likely heal with observation. Repair may be undertaken. The more distal ureter may be injured as well, and repair can be accomplished easily with ureteroneocystostomy. A bladder flap is not necessary given the very distal location of the fistula.

**511.** A 23-year-old woman suffers a complex pelvic fracture in a motor vehicle accident. A cystogram reveals limited extraperitoneal extravasation of contrast at the bladder neck. The bladder is compressed by a pelvic hematoma and an anterior vaginal laceration is also present. No other injuries are noted and the patient is hemodynamically stable. Treatment should be:

A) urethral catheter drainage.

B) percutaneous suprapubic cystostomy.

C) open bladder repair.

D) suprapubic cystostomy and perivesical drainage.

E) repair of vaginal and bladder lacerations.

**Correct Answer** **E**

**Explanation** Urethral injuries in women are rare. The urethra is short, mobile, and protected by the pubis in women. Associated vaginal lacerations are common with urethral injuries. Such injuries should be repaired immediately to preserve the functional integrity of the bladder neck. The vaginal injury should be closed, as well, to prevent a vesicovaginal fistula.

**512.** When performing radical prostatectomy, which best describes the location of the neurovascular bundles in relation to the urethra, prostate, and seminal vesicles: <br><table width='350'><tr><td width='50'></td><td width='100'>Uretha</td><td width='100'>Prostate</td><td width='100'>Seminal Vesicle</td></tr><tr><td>A</td><td>posterior</td><td>lateral</td><td>lateral</td></tr><tr><td>B</td><td>lateral</td><td>posterolateral</td><td>medial</td></tr><tr><td>C</td><td>lateral</td><td>lateral</td><td>lateral</td></tr><tr><td>D</td><td>posterior</td><td>posterolateral</td><td>medial</td></tr><tr><td>E</td><td>lateral</t

A) A
B) B
C) C
D) D
E) E

**Correct Answer** **E**

**Explanation** The neurovascular bundles can be found lateral to the seminal vesicles, posterolateral to the prostate, and lateral to the urethra, and can be damaged in any of these areas by indiscriminate dissection.

**513.** A 60 kg, 40-year-old woman with recurrent calcium oxalate nephrolithiasis has normal serum calcium and phosphorus levels. Twenty-four hour urine parameters are:
<br><table><TR><TD>Calcium</TD><TD>Creatinine</TD><TD>Oxalate</TD><TD>Citrate</TD><td>Uric Acid</td></TR><TR><TD>350 mg</TD><TD>1800 mg</TD><TD>50 mg</TD><TD>1000 mg</TD><td>800 mg</td></TR></table>

A) hydrochlorothiazide therapy.
B) allopurinol therapy.
C) pyridoxine therapy.
D) creatinine clearance.
E) recollect urine.

**Correct Answer** **E**

**Explanation** Urinary creatinine provides an assessment of the completeness of a urine collection. In women, it should be 14-21 mg/kg/day and, in men, it should be 20-27 mg/kg/day. This individual over-collected as her urinary creatinine excretion was 30 mg/kg/day. Repeating a urine collection would be the most appropriate step.

**514.** Bacteriuria associated with pregnancy is diagnosed most frequently:

A) in the first trimester.
B) in the second trimester.
C) in the third trimester.
D) immediately postpartum.
E) equally throughout pregnancy.

**Correct Answer** **A**

**Explanation** The prevalence of bacteriuria during pregnancy is approximately 5%, a prevalence similar to non-pregnant women. Bacteriuria in pregnant women correlates with age, sexual activity, parity and low socioeconomic status. It is most commonly diagnosed in the first trimester.

**515.** In the hormonal treatment of disseminated prostate cancer, the drug with the most rapid onset of action in inhibiting testosterone production by the testis is:

A) leuprolide.
B) aminoglutethimide.
C) diethylstilbestrol.
D) ketoconazole.
E) flutamide.

**Correct Answer** **D**

**Explanation** Ketoconazole inhibits the enzyme 17,20 desmolase, thereby preventing the conversion of cholesterol to testosterone. Ketoconazole acts rapidly. Castrate levels are reached after 48 hours of treatment with a dose of 400 mg every eight hours. None of the other agents used to lower serum testosterone (LH-RH agonists or DES) acts as rapidly.

**516.** A patient with bladder outlet obstruction secondary to BPH has an elevated serum creatinine, bilateral ureteral dilation, and a residual urine of 1200 ml. There is Grade III/V vesicoureteral reflux on a filling video CMG. The renal function abnormalities and ureteral changes are related to:

A) compression of the ureter at the ureterovesical junction.
B) the development of high grade reflux.
C) increased urethral resistance.
D) high voiding pressure.
E) sustained high filling pressure.

**Correct Answer** **E**

**Explanation** Renal and ureteral impairment in BPH are related to high pressure chronic retention. High voiding pressures if not sustained for long periods do not usually induce ureteral changes nor renal functional impairment. While compression of the ureter at the U.V. junction might impair ureteral urine delivery to a degree, sustained bladder pressure elevations are required for the upper tract abnormalities described. Vesicoureteral reflux also results from the high pressures.

**517.** Transient urinary incontinence that occurs with an increase in intra-abdominal pressure in women under 50 years of age is most frequently associated with:

A) low resting urethral pressure.
B) dysfunction of the external striated sphincter.
C) urethral hypermobility.
D) a cystocele, rectocele, and uterine prolapse.
E) shortened urethral length and loss of the angle of urethral inclination.

**Correct Answer** **C**

**Explanation** While shortened urethral length and angle changes have been related to stress incontinence, these findings are less consistent than hypermobility. Stress incontinence in younger women is not usually associated with low urethral pressures, and there is no relationship between genital prolapse or urethral prolapse and incontinence; external sphincter activity does not have a consistent relationship with stress urinary incontinence.

**518.** The principal advantage of the conjoined ureteroileal anastomosis (Wallace technique) as compared to the standard Bricker technique of anastomosis is decreased:

A) operative time.
B) stone formation.
C) ureteral reflux.
D) pyelonephritis.
E) anastomotic stricture.

**Correct Answer** **E**

**Explanation** The principal advantage of the conjoined technique of ureteroileal anastomosis is the larger anastomosis to the ileum, thereby decreasing the risk of ureteral anastomotic stenosis. This technique does not decrease operative time, stone formation, pyelonephritis, or reflux.

**519.** During exploration of a retroperitoneal hematoma from blunt renal trauma, the best anatomic landmark for the left renal artery is the:

A) superior mesenteric artery.
B) left renal vein.
C) right renal artery.
D) left gonadal vein.
E) left ureter.

**Correct Answer** **B**

**Explanation** The left renal artery originates from the aorta just lateral and superior to the left renal vein. Identifying the left renal vein as it crosses the aorta provides the best anatomic landmark for the left renal artery.

**520.** A 45-year-old man has a large renal cell carcinoma. The SGOT, alkaline phosphatase, LDH, and alpha-2-globulin levels are increased and the prothrombin time is prolonged. The liver is diffusely enlarged but there are no intrahepatic filling defects. The most likely explanation for these findings is:

A) hepatotoxic effect of the tumor.
B) liver metastases.
C) amyloidosis.
D) tumor thrombus obstructing hepatic vein.
E) acute hepatitis.

**Correct Answer** **A**

**Explanation** Abnormal liver function tests that appear to be reversible with tumor removal are found in up to 15% of patients who have renal cell carcinoma. This has been referred to as Stauffer's syndrome. These abnormal tests may recur with subsequent development of a metastasis again resolving with tumor resection. The mechanism is unknown although a toxic effect on liver cells is most likely. Amyloidosis develops in 2% to 3% of patients with renal cell carcinoma, and there is frequently renal involvement associated with the nephrotic syndrome. Hepatic amyloidosis is a possible cause of disordered liver function tests but is uncommon. Liver metastases are a late occurrence and unlikely in the absence of other secondary deposits. Hepatitis may be considered but this is usually diagnosed by other laboratory tests. Renal carcinoma rarely causes hepatic vein obstruction.

**521.** The rapid intravenous infusion of a large dose of furosemide (Lasix) in an azotemic patient may result in:

A) auditory impairment.
B) hypomagnesemia.
C) hypoglycemia.
D) hypouricemia.
E) hypercalcemia.

**Correct Answer** **A**

**Explanation** A large dose of Lasix administered in the presence of impaired renal function or in association with aminoglycoside antibiotics is more likely to cause auditory impairment (which may be permanent) than if administered in the presence of normal renal function or in the absence of aminoglycosides. The other abnormalities listed would not occur acutely.

**522.** An infant has the prenatal diagnosis of a solid abdominal mass that spontaneously regresses on serial postnatal ultrasounds during the first year of life. The most likely diagnosis is:

A) mesoblastic nephroma.
B) Wilms' tumor.
C) neuroblastoma.
D) sacrococcygeal teratoma.
E) retroperitoneal yolk sac tumor.

**Correct Answer** **C**

**Explanation** Of the tumors listed, neuroblastoma is the only one that is frequently associated with spontaneous regression. Autopsy studies show a much higher rate of incidental neuroblastoma than is seen clinically. Because of the regression (or maturation to ganglioneuroma) some infants with neuroblastoma should not be treated. This is particularly true for those with Stage IV-S, characterized by multiple sites of metastases, including bone marrow, liver and/or skin lesions.

**523.** The optimal dose of 30% iodinated contrast medium for an intraoperative IVP in a non-obese adult patient suspected of having renal trauma is:

A) .5 ml/kg.
B) 1.0 ml/kg.
C) 2.0 ml/kg.
D) 2.5 ml/kg.
E) 3.0 ml/kg.

**Correct Answer** **C**

**Explanation** Intraoperative IVP is performed in unstable trauma patients who can't undergo a radiographic evaluation in the emergency room. A film is taken ten minutes after contrast is administered intravenously. A 2 ml/kg dose of contrast medium is recommended for this study.

**524.** A 36-year-old woman has suffered from recurrent cystitis for several years. An IVP was normal two years ago. Now she is treated with trimethoprim-sulfa while a urine culture is pending. The culture demonstrates Proteus mirabilis, sensitive to ampicillin, but not to trimethoprim or sulfa. She is treated for eight days with ampicillin 250 mg q.i.d. A catheterized urine culture obtained ten days after the ampicillin is discontinued again demonstrates Proteus mirabilis sensitive to ampicillin and cephalexin. The next step is:

A) restart ampicillin for 4-6 weeks.
B) restart ampicillin for 10 days.
C) begin cephalexin for 10 days.
D) obtain an IVP.
E) introital culture.

**Correct Answer** **D**

**Explanation** Refractory or relapsing urinary tract infection after reasonable antimicrobial therapy should make the physician suspect a complicated infection. In a patient with a history of recurrent cystitis and relapsing urinary tract infection with Proteus mirabilis, the physician should further suspect the possibility of infected calculi (i.e. struvite calculi associated with urease producing bacteria such as Proteus sp.). Upper urinary tract imaging, such as IVP, is indicated in this case.

**525.** Which vessel is at greatest risk for injury during laparoscopic placement of an umbilical trocar:

A) right common iliac vein.
B) vena cava.
C) abdominal aorta.
D) right common iliac artery.
E) inferior mesenteric artery.

**Correct Answer** **D**

**Explanation** The right common iliac artery lies close to the midline at the inferior umbilicus. Therefore, with placement of an umbilical trocar, the right common iliac artery is most at risk for puncture injury.

**526.** An 84-year-old woman with mild cognitive impairment has urge incontinence. She has a Grade I cystocele, residual urine of 50 cc, and a normal urinalysis. Her incontinence should initially be treated by:

A) oxybutynin.
B) fluid restriction.
C) imipramine.
D) Kegel exercise.
E) prompted voiding.

**Correct Answer** **E**

**Explanation** Kegel exercise and fluid restriction alone have not been shown to be effective in the long-term treatment of urinary incontinence in the geriatric population. The incidence and severity of side effects of the anticholinergic agents, especially imipramine, are significant in the geriatric population. Prompted time voiding, especially in those patients who have responded to a trial of prompted voiding, is most often associated with decreased incontinence episodes in the elderly.

**527.** A 53-year-old man with a two year history of Peyronie's disease and erectile dysfunction non-responsive to oral medication undergoes color-flow Doppler ultrasound of the penis. After injection of 20 mcg of prostaglandin E<sub>1</sub>, he develops a partial erection with significant curvature. Peak flow velocity is 10 cm/sec in the right corporal artery and 2 cm/sec in the left. The most appropriate management is:

A) plaque excision and dermal graft inlay.
B) Nesbit plication and pharmaco-injection therapy.
C) cavernosography.
D) pudendal arteriography.
E) placement of a penile prosthesis.

**Correct Answer** **E**

**Explanation** In addition to Peyronie's disease, this patient has significant cavernosal arterial disease, normal cavernosal peak flow velocity should be > 25 cm/sec. Plaque excision will not improve his arterial inflow and will leave him impotent. A phalloplasty (penile straightening) procedure would be less morbid than plaque excision. Certainly, placement of a penile prothesis or use of a vacuum-constrictor device would be appropriate treatment options. Cavernosography is an attempt to demonstrate venous leak and would not be helpful given the patient's arterial inflow disorder.

**528.** Deletions of the short arm of chromosome 3 occur most frequently in association with:

A) papillary renal cell carcinoma.
B) angiomyolipoma.
C) renal medullary carcinoma.
D) oncocytoma.
E) clear cell renal cell carcinoma.

**Correct Answer** **E**

**Explanation** Deletions of the short arm of chromosome 3 are characteristic of clear cell carcinomas, which are seen in sporadic cases of renal cell carcinoma and those associated with von Hippel-Lindau disease.

**529.** A 25-year-old man with multiple sexual partners has a three-day history of purulent penile discharge. Gram negative intracellular diplococci are found on gram stain of a urethral swab. The best treatment is a single dose of:

A) penicillin G.
B) amoxicillin.
C) azithromycin.
D) ciprofloxacin.
E) ceftriaxone.

**Correct Answer** **C**

**Explanation** CDC recommendations for treatment of genitourinary gonorrhea include all of the above agents except penicillin. However, up to 30% or more of men with gonorrhea will have concomitant chlamydial infections, so presumptive treatment of chlamydia is required as part of the therapy of gonococcal infections. Of the antibiotics listed, only azithromycin will treat chlamydia adequately.

**530.** A 65-year-old man with lower urinary tract symptoms and an AUA Symptom Score of 18 is treated with terazosin. Six months later he develops hypertension. Which antihypertensive drug is contraindicated:

A) hydrochlorothiazide.
B) verapamil.
C) metoprolol.
D) losartan.
E) enalapril.

**Correct Answer** **B**

**Explanation** Concomitant use of terazosin and calcium channel blockers, especially verapamil is dangerous and can precipitate severe hypotension.

**531.** A 76-year-old debilitated woman has had six episodes of asymptomatic bacteriuria treated with antimicrobial agents over the last year. The latest culture shows >10<sup>5</sup> E. coli cfu/ml. The organism is sensitive only to ciprofloxacin and intravenous agents. Treatment with ciprofloxacin will most likely:

A) reduce mortality.
B) reduce morbidity.
C) increase morbidity.
D) improve performance status.
E) have no affect on health status.

**Correct Answer** **E**

**Explanation** Although several earlier studies suggest that a relationship might exist between bacteriuria and mortality in the aged, these observations have not been adequately substantiated even by some of the original investigators. A recent prospective cohort study combined with a controlled clinical trial of treatment of elderly women without urinary catheters demonstrated urinary tract colonization was not an independent risk factor for mortality and that treatment did not lower the mortality rate. Treatment potentially could increase morbidity by selecting for resistant organisms as well as adverse reactions to the drug including significant and serious allergic reactions.

**532.** A 43-year-old man with renal failure due to chronic glomerulonephritis has been on maintenance hemodialysis for two years. He voids approximately 500 cc of urine per day. He now complains of the sudden onset of severe right flank pain which is associated with microhematuria. The most likely explanation is:

A) renal vein thrombosis.
B) renal cell cancer.
C) subcapsular renal hemorrhage.
D) urolithiasis.
E) papillary necrosis.

**Correct Answer** **D**

**Explanation** Symptomatic urolithiasis occurs in 7% of the hemodialysis population with a male predominance of 3 to 1. These stones are usually composed of protein and calcium oxalate monohydrate. Approximately 20-50% of dialysis patients have asymptomatic calculi diagnosed by ultrasonographic or routine radiographic studies. The other diagnoses listed are all much more unlikely than urolithiasis.

**533.** A 55-year-old man with marked irritative and obstructive voiding symptoms has a large pelvic mass. Transrectal biopsy reveals a small cell carcinoma of the prostate. Initial treatment should be:

A) M-VAC chemotherapy.
B) LH-RH agonist.
C) cystoprostatectomy.
D) external beam radiotherapy.
E) VP16 and cis-platinum.

**Correct Answer** **E**

**Explanation** Small cell carcinoma of the prostate carries a very poor prognosis. In most patients, the course is rapidly fatal. These tumors do not respond to hormonal therapy or radiotherapy. There are reports of clinical remission following chemotherapy. Chemotherapeutic regimens similar to those used for pulmonary small cell carcinoma have been most effective.

**534.** A 1200 gm newborn boy is treated for presumed sepsis with antibiotics via an umbilical artery catheter for two weeks. Five days later a skin rash is noted and urinary output decreases. He develops respiratory distress and abdominal distention. There is gross hematuria and particulate matter in the urine. The most likely diagnosis is:

A) renal vein thrombosis.
B) fungal urinary infection.
C) umbilical artery perforation.
D) renal papillary necrosis.
E) renal cortical necrosis.

**Correct Answer** **B**

**Explanation** Indwelling intravascular catheters and concomitant broad spectrum antibiotics increase the likelihood of candidal infection, particularly in premature low birth weight infants. If hydronephrosis and fungus balls are present in the renal collecting system, percutaneous drainage and irrigation with Amphotericin-B may be needed. At times, fluconazole may be effective.

**535.** A 64-year-old woman has a Grade IV cystocele without urinary incontinence. To determine the need for concomitant bladder neck suspension with cystocele repair, she should undergo:

A) a pelvic MRI scan.
B) urethral pressure profilometry.
C) urodynamics with pessary.
D) cystoscopy.
E) uroflowmetry with postvoid residual.

**Correct Answer** **C**

**Explanation** Many women will develop de-novo stress incontinence after repair of a cystocele due to poor support of the urethra. Preoperatively, a urodynamic study should be performed with a pessary or vaginal pack in place to assess the competence of the bladder neck with proper bladder support. A filling study (CMG) to assess for detrusor instability, as well as Valsalva leak point pressure should be performed.

**536.** A 19-year-old man with mixed gonadal dysgenesis undergoes surgery for an undescended right testis. A 3 cm mass is found where the testicular vessels terminate inside the inguinal ring, along with an adjacent fallopian tube. The gonadal mass is most likely:

A) ovary.
B) gonadoblastoma.
C) streak gonad.
D) ovotestis.
E) seminoma.

**Correct Answer** **E**

**Explanation** Mixed gonadal dysgenesis (MGD) classically implies the presence of a normal testis with a contralateral streak gonad. The incidence of tumors in MGD is 25%, and the streak gonad should be removed when the syndrome is recognized. Gonadoblastoma, which is derived from both the germinal and interstitial elements, is often found in patients with MGD. Nevertheless, seminoma is still much more common in this patient population.

**537.** A 60-year-old woman has undergone jejunal conduit diversion. In order to prevent the jejunal conduit syndrome, she will require long-term therapy with:

A) balanced citrate solution.
B) Shohl's solution
C) sodium chloride.
D) sodium bicarbonate.
E) potassium chloride.

**Correct Answer** **C**

**Explanation** Jejunal conduits lose salt and reabsorb potassium. Urinary salt concentration in these patients is lower than jejunal levels, resulting in a washout of NaCl through the jejunal mucosa with a subsequent decrease in extracellular fluid volume. This reduces GFR, further decreasing the amount of sodium chloride excreted by the kidneys. When hyponatremia and accompanying dehydration reduce GFR, the secretion of H is further diminished and metabolic acidosis ensues. With acidosis, potassium is shifted from intra- to extracellular space resulting in hyperkalemia. There are two vicious cycles: salt loss and potassium absorption. Adding salt to the diet helps prevent the syndrome. In patients with abnormal renal function or who become dehydrated, overt hyponatremia, acidosis, and hyperkalemia will develop and will require I.V. normal saline until homeostasis is restored. The other replacement solutions are not appropriate.

**538.** The antibiotic associated with Achilles tendon rupture is:

A) ampicillin.
B) cephalexin.
C) nitrofurantoin.
D) trimethoprim-sulfamethoxazole.
E) ciprofloxacin.

**Correct Answer** **E**

**Explanation** Achilles and other tendon ruptures have been reported with ciprofloxacin and other quinolones.

**539.** A 38-year-old woman has severe right flank pain. She is afebrile and urinalysis demonstrates pyuria and microhematuria. A helical CT scan demonstrates right perinephric fluid and right hydroureteronephrosis down to a 3 mm distal ureteral stone. The best treatment is:

A) ureteral stent.
B) percutaneous nephrostomy drainage.
C) percutaneous drainage of perinephric fluid.
D) ureteroscopic stone removal.
E) analgesic therapy.

**Correct Answer** **E**

**Explanation** Forniceal extravasation is usually associated with a small distal ureteral calculus. These patients should be treated no differently than others with ureteral stones. Intervention should be undertaken when there is an associated fever, nausea/vomiting, or unrelenting pain. Otherwise, conservative observation is appropriate. The AUA guidelines clearly state that a period of observation awaiting spontaneous passage is appropriate.

**540.** A 60-year-old woman develops pain, tenderness, and a palpable mass over the graft three days after undergoing renal transplantation. An IVP shows urinary extravasation limited to the distal aspect of the ureter; contrast enters the urinary bladder. She is clinically stable. The most appropriate initial treatment is:

A) percutaneous nephrostomy drainage.
B) repeat ureteroneocystostomy.
C) percutaneous drain placement.
D) retrograde ureteral stent placement.
E) ureteroureterostomy using the native ureter.

**Correct Answer** **A**

**Explanation** The incidence of ureteral fistulas has decreased as transplant surgeons have emphasized the importance of preserving the periureteral blood supply. Such fistulas are usually due to ureteral necrosis. In the present case, extravasation is limited to the distal ureter, and the situation could be corrected by excision of the necrotic portion of ureter and repeat ureteroneocystostomy. However, as the extravasation is limited and contrast does enter the bladder signifying absence of obstruction, percutaneous drainage of the kidney alone may be successful.

**541.** During surgical exploration for penetrating renal trauma, the first major branch of the left renal artery is transected. The renal segment most likely supplied by this branch is:

A) apical.
B) upper anterior.
C) middle anterior.
D) lower.
E) posterior.

**Correct Answer** **E**

**Explanation** The first branch of the left renal artery is a small ureteral branch, but the first major branch is the posterior or dorsal artery. This artery primarily supplies the posterior segment of the kidney alone, but occasionally may provide a small branch to the apical segment as well. The anterior or ventral artery generally supplies branches to all but the posterior segment.

**542.** Which of the following is a polygenic disorder:

A) cystinuria.
B) Type I primary hyperoxaluria.
C) Type II primary hyperoxaluria.
D) idiopathic calcium oxalate nephrolithiasis.
E) adenine phosphoribosyl transferase deficiency.

**Correct Answer** **D**

**Explanation** Idiopathic calcium oxalate nephrolithiasis is thought to be a polygenic disorder, one influenced by several genes. The other entities are monogenic, arising from an abnormality in a single gene.

**543.** A recently married, 25-year-old man had a radical orchiectomy for embryonal cell carcinoma. There was lymphatic invasion in the rete testis. Serum markers, chest and abdominal CT scan are normal. His semen analysis shows a volume of 3 ml, 25 million sperm per ml, motility 60%, and 50% normal forms. The patient and his wife want the treatment that gives the best chance for fertility, as well as the best cancer control. He should be advised to undergo:

A) radiotherapy.
B) surveillance.
C) modified retroperitoneal lymphadenectomy.
D) bilateral retroperitoneal lymphadenectomy.
E) platinum-based combination chemotherapy.

**Correct Answer** **C**

**Explanation** The presence of lymphatic invasion in the rete testis predicts a high likelihood of retroperitoneal disease in this patient (approximately 50%). All of the therapeutic alternatives listed may have an adverse effect on fertility. Chemotherapy can result in a permanent adverse effect on fertility in approximately 30% of patients. With a modified retroperitoneal lymph node dissection or nerve-sparing dissection, fertility is preserved in 80%-90% of patients. Even if he has retroperitoneal lymph node involvement, RPLND is curative in 50-60% of patients and chemotherapy can be avoided. The presence of both embryonal cell carcinoma and invasion of the rete testis places the patient at significant risk of metastatic disease. If he is observed and recurs, he will require chemotherapy which will have an adverse effect on his fertility. Radiation therapy is not indicated in nonseminomatous tumors.

**544.** A 27-year-old woman has passed multiple calcium phosphate stones. The pH of an early morning urine is 6.5. Serum electrolytes reveal Na 140 mEq/l, K 3.4 mEq/l, Cl 112 mEq/l, and CO<sub>2</sub> 20 mEq/l. The next step in her evaluation is:

A) serum aldosterone.

B) serum renin.

C) serum parathormone.

D) 24-hour urine citrate.

E) 24-hour urine potassium.

**Correct Answer** **D**

**Explanation** Renal tubular acidosis can be caused by a variety of disorders that interfere with the ability of the renal tubule to secrete hydrogen ion. There are two major types; type 1, classic or distal; and type 2, proximal. Type 1 or distal RTA occurs due to a defect in the distal nephron. The normal kidney can respond to various stimuli by excreting sufficient free hydrogen to produce a minimum urine pH of 4.0 to 4.4. Inability of the kidney to acidify the urine to a pH of less than 5.4 is a sign of distal RTA. Most patients with this disorder have a urine pH greater than 6. Patients with distal RTA have a hypokalemic, hyperchloremic metabolic acidosis. These patients are prone to urolithiasis and can develop nephrocalcinosis. Low urinary citrate in this setting is diagnostic.

**545.** A 63-year-old man has a temperature of 102°F and fecaluria eight days after radical perineal prostatectomy. A pelvic CT scan demonstrates a 5 by 4 cm heterogeneous peri-rectal fluid collection. He had received an oral bowel prep and antibiotics pre-operatively. The best management is parenteral antibiotics, percutaneous drainage of the fluid collection, and:

A) low-residue diet.
B) parenteral hyperalimentation.
C) suprapubic tube.
D) colostomy.
E) enteral hyperalimentation.

**Correct Answer** **D**

**Explanation** Rectal injury occurs in approximately 1.5% of patients undergoing radical perineal prostatectomy. If the injury is recognized intraoperatively and the patient has received an appropriate combination bowel prep, the injury can be repaired primarily. If the rectal injury is recognized post-operatively as a vesicorectal fistula, conservative management is not indicated. In this case, the patient also has associated infection and therefore a colostomy with delayed primary repair is indicated.

**546.** A 63-year-old man with a long history of urethral stricture disease has a large periurethral abscess. The abscess is drained and the surrounding tissues are debrided to the deep bulbar urethra. Pathology shows acute and chronic inflammation. He is continent but has a persistent urethrocutaneous fistula. After three weeks, there is minimal granulation tissue. The next step is:

A) flap inlay urethroplasty.
B) insertion of a Foley catheter.
C) myocutaneous flap for coverage.
D) whirlpool baths and wet-to-dry dressings.
E) suprapubic cystostomy and repeat biopsies.

**Correct Answer** **E**

**Explanation** In this patient with a non-healing abscess cavity and a long history of strictures, one must strongly consider the possibility of urethral carcinoma despite previous negative biopsies during an acute inflammatory phase. Thus, none of the other options should be done without a biopsy. Urinary diversion is indicated in pyogenic involvement of the urethra.

**547.** The von Hippel-Lindau tumor suppressor gene regulates the expression of:

A) basic fibroblastic growth factor.
B) epidermal growth factor receptor.
C) c-Met proto-oncogene.
D) vascular endothelial growth factor.
E) transforming growth factor beta.

**Correct Answer** **D**

**Explanation** The wild type VHL tumor suppressor gene product suppresses the expression of vascular endothelial growth factor (VEGF), a potent stimulator of angiogenesis. Mutation or loss of the VHL tumor suppressor gene leads to dysregulated expression of VEGF, which contributes to the neovascularity associated with renal cell carcinoma.

**548.** A 24-year-old man with azoospermia and an ejaculate volume of 0.5 ml has a palpably normal left vas deferens, a nonpalpable right vas deferens, and a normal digital rectal examination. Both testes measure 30 ml. The most useful diagnostic study for infertility is:

A) transrectal ultrasonography.
B) serum testosterone.
C) post-ejaculatory urinalysis.
D) testicular biopsy.
E) seminal fructose.

**Correct Answer** **A**

**Explanation** The differential diagnosis for low ejaculate volume azoospermia is vasal agenesis, ejaculatory duct obstruction, and ejaculatory dysfunction. The presence of unilateral vasal agenesis upon physical examination of this patient strongly suggests the presence of a congenital anomaly with contralateral segmental vasal atresia. Transrectal ultrasonography will help differentiate between a potentially treatable ejaculatory duct obstruction and, more likely, absence or hypoplasia of the contralateral seminal vesicle and ampullary vas deferens. Patients with vasal agenesis do not require either a serum FSH or testicular biopsy unless they have testicular atrophy or another historical risk factor. Seminal fructose does not help differentiate between these two disorders, it is absent in both.

**549.** A 59-year-old woman undergoes renal exploration for a 2.5 cm lower pole cystic tumor on the surface of the left kidney. Intraoperative inspection reveals a second smaller tumor nearby which had not been seen on preoperative CT scan. Excisional biopsies reveal both tumors to be papillary renal cell carcinomas with negative surgical margins. The contralateral kidney is radiographically normal. The next step is:

A) no further therapy.
B) intraoperative renal ultrasound.
C) lower pole nephrectomy.
D) contralateral renal exploration.
E) nephrectomy.

**Correct Answer** **E**

**Explanation** Papillary renal cell carcinomas are commonly multifocal, but regardless of histology the presence of multifocal tumors in one kidney is an indication for total nephrectomy if the opposite kidney is normal because of a higher risk of local recurrence in the affected kidney. Intraoperative ultrasound might identify other unsuspected tumors but this would not change the recommended management. Cryosurgical ablation of renal tumors is investigational.

**550.** A 21-year-old man with sickle cell disease has an 18-hour history of a painful, persistent erection. The best initial management is:

A) oral terbutaline.
B) Winter shunt.
C) transfusion and alkalinization.
D) perineal spongiosum-cavernosum shunt.
E) saphenous vein-cavernosum shunt.

**Correct Answer** **C**

**Explanation** The cause of priapism is an important issue in defining treatment. In patients with sickle cell anemia priapism should be initially treated with intravenous hydration, alkalinization, oxygenation, and transfusion. If priapism persists > 24-48 hours then corporal aspiration and phenylephrine can be used. Shunt procedures should be reserved for failure of conservative measures.

**551.** Androgen ablation prior to radical prostatectomy results in:

A) improved postoperative potency.
B) improved urinary continence rates.
C) decreased positive surgical margins.
D) decreased risk of lymph node metastases.
E) increased time to disease progression.

**Correct Answer** **C**

**Explanation** The use of pre-operative androgen ablation in patients undergoing surgical treatment for localized prostate cancer can result in a decrease in surgical positive margins by 20-30%. Some studies now suggest that downsizing does not affect PSA recurrence rates beneficially.

**552.** A four-year-old girl is undergoing a left ureteral reimplantation for Grade III/V lower pole reflux. She has a duplex left kidney with a nonobstructed upper pole and normal caliber ureters. When the bladder is opened, a small left ureterocele is noted. The best management is:

A) excise the ureterocele, reimplant the lower pole ureter, and perform an upper pole partial nephrectomy.
B) excise the ureterocele and perform an upper pole partial nephrectomy.
C) excise the ureterocele and reimplant both the upper and lower pole ureters.
D) perform an ipsilateral ureteroureterostomy of the refluxing lower pole ureter into the upper pole ureter.
E) incise the ureterocele and close the bladder.

**Correct Answer** **C**

**Explanation** Although the small caliber upper pole ureter drains what appears to be a non-functioning renal segment, some urine is produced from the upper pole segment. Incising the ureterocele may result in reflux to that segment. A ureteroureterostomy into the ureter of the ureterocele may result in obstruction. Upper pole partial nephrectomy is not necessary, even if the function of the system is quite poor. A common sheath ureteral reimplantation after excision of the ureterocele is a safe one stage method of management.

**553.** A 55-year-old man with epigastric discomfort has a 5 cm right adrenal mass on CT scan. The mass measures negative 40 Hounsfield units. The next step is:

A) observation.
B) plasma catecholamines.
C) MIBG scan.
D) right adrenalectomy.
E) AM serum cortisol.

**Correct Answer** **A**

**Explanation** A mass with Hounsfield units between negative 30 and negative 140 is characteristic of an adrenal myelolipoma. These tumors are benign and are composed of lipid and myeloid tissue. No additional therapy or evaluation is required.

**554.** A six-month-old boy had a myelomeningocele which was closed at birth. He has had a documented febrile UTI. Ultrasound shows bilateral moderate hydronephrosis, and VCUG shows no reflux. It is likely that:

A) spinal shock persists.
B) prophylactic antibiotics will prove definitive.
C) reflux has spontaneously resolved.
D) bladder augmentation will be necessary.
E) detrusor leak point pressure is greater than 40 cm H<sub>2</sub>O.

**Correct Answer** **E**

**Explanation** Hydronephrosis and infection in the six-month-old patient with myelodysplasia would imply a detrusor leak point pressure of greater than 40 cm H<sub>2</sub>O. Although spontaneous resolution of reflux is observed, one would not anticipate hydronephrosis. Usually EMG demonstrates continuous or increasing activity with filling. Intermittent catheterization or vesicostomy should be considered rather than augmentation. Only 10% to 20% of patients with myelodysplasia will ultimately require augmentation. Antibiotics alone would not be adequate therapy.

**555.** A 27-year-old man being evaluated for infertility of nine months duration has a normal sperm count and motility but sperm morphology reveals only round headed sperm. Testis volume is normal bilaterally, serum FSH is within normal limits, and he has a moderate sized left unilateral varicocele. His wife is 25 years old and has a normal evaluation. The next step is:

A) varicocele repair.
B) intrauterine insemination.
C) re-evaluation in three months.
D) in vitro fertilization.
E) intracytoplasmic sperm injection.

**Correct Answer** **E**

**Explanation** Observation is a reasonable choice in young couples with infertility of less than one year's duration. However, the finding of round headed sperm is consistent with absence of the acrosome and individuals with this finding are sterile. Standard intrauterine inseminations and in vitro fertilization are unsuccessful because the sperm can not fertilize an egg without a normal acrosome. Varicocele repair will not improve the morphology. The only method that will induce a pregnancy using the patient's sperm is in vitro fertilization using intracytoplasmic sperm injection. The alternative is donor insemination.

**556.** A 24-year-old man has a pure seminoma found in a radical inguinal orchiectomy specimen. His preoperative serum AFP is normal, and beta-hCG is 10 MIU/ml (normal < 3 MIU/ml). Postoperatively, the serum hCG at one week is 2 MIU/ml. Physical examination is normal. Chest x-ray and abdominal CT studies are normal. The most appropriate treatment is:

A) retroperitoneal radiation therapy.

B) retroperitoneal lymphadenectomy.

C) retroperitoneal and mediastinal radiation therapy.

D) vinblastine, bleomycin, and cisplatin chemotherapy.

E) surveillance.

**Correct Answer** **A**

**Explanation** Serum hCG is mildly elevated in approximately 10% of patients with pure seminoma. It is important to review all of the pathologic specimen carefully for evidence of nonseminomatous germ cell testicular cancer; however, often only syncytial giant cells are found. Recent studies have shown that these cells stain positively for hCG using immunoperoxidase methods. In some cases, no such cells are found. Treatment for Stage A seminoma in this patient remains radiation therapy, with evidence showing no survival advantage to adding mediastinal therapy to abdominal radiation in patients with Stage I or II-A disease. In addition, maximum bone marrow reserve is maintained so that possible future chemotherapy will not be compromised.

**557.** A 52-year-old man with sickle cell disease had a 30-year history of priapism occurring every two to three months. Most of the episodes necessitated hospitalization and responded to medical management. Three months ago, however, a cavernosal-spongiosum shunt was required. Since the surgery, he has had no episodes of priapism but must apply a rubber band to the base of the penis to obtain satisfactory erection. The most appropriate course of management is:

A) intracorporeal prostaglandin injections.
B) observation.
C) cavernosography.
D) insertion of penile prosthesis.
E) cavernosal pressure studies.

**Correct Answer** **B**

**Explanation** The clinical history suggests erectile dysfunction due to patency of the cavernosal-spongiosum shunt. However, since satisfactory erections can be obtained with the application of a constricting device at the base of the penis, and because closure of the shunts would lead probably to recurrence of the debilitating priapism, further investigation is not warranted.

**558.** Following a TURP, striated muscle is identified in the prostate chips. The patient will most likely experience:

A) incontinence.
B) impotence.
C) urinary extravasation.
D) excessive bleeding.
E) no complications.

**Correct Answer** **E**

**Explanation** Striated muscle can be demonstrated in the normal prostate gland. In fact, striated muscle can be found in the prostate chips following TURP in up to 30% of cases. This striated muscle is thought to be a reflection of pelvic floor striated muscle and is a normal finding. The presence of striated muscle in prostate chips does not increase the likelihood of the patient experiencing postoperative incontinence, impotence, excessive bleeding, or urinary extravasation.

**559.** Among girls seen for evaluation of a reported straddle injury, which factor mandates an evaluation for sexual abuse:

A) recurrent UTIs.
B) diurnal enuresis beyond age six years.
C) infrequent voiding.
D) age under nine months.
E) encopresis.

**Correct Answer** **D**

**Explanation** Genitourinary manifestations of sexual abuse in children are many and straddle injuries often can be confused with abuse. A straddle injury under nine months of age is a 'red flag' of abuse in that children of that age are not ambulatory.

**560.** Capacitation of spermatozoa:

A) occurs in the epididymis.
B) is activated by seminal plasma.
C) requires cervical mucus.
D) occurs in the female genital tract.
E) results in loss of tail structure.

**Correct Answer** **D**

**Explanation** Capacitation is a poorly characterized series of biochemical and cellular changes in spermatozoa which normally take place within the female reproductive tract. Capacitation is followed by characteristic changes in motility and the ability to fertilize the human ovum. Capacitation can occur in vitro through incubation of the sperm in special buffer materials. Seminal plasma inhibits capacitation.

**561.** A 62-year-old man has persistent severe dysuria four months following kidney/pancreas transplantation drained via pancreaticoduodenocystostomy. Urine culture is negative. Cystoscopic examination reveals severe posterior urethritis. A retrograde urethrogram (RUG) reveals extravasation from the bulbar urethra. The most likely explanation is:

A) cytomegaloviral urethritis.
B) urethral stricture.
C) activated proteolytic exocrine enzymes.
D) urethral perforation from cystoscopy.
E) over-injection of contrast during RUG.

**Correct Answer** **C**

**Explanation** Dysuria syndrome is now a well recognized urologic complication that follows combined kidney/pancreas transplantation drained via pancreaticoduodenocystostomy. The classic presentation is severe dysuria beginning several months after the transplant. Often there is a history of urethral instrumentation. Cystoscopic findings range from severe posterior urethritis to necrosis of the bulbar urethra, while a retrograde urethrogram will reveal extravasation from the bulbar urethra, in almost all cases. Depending on the severity, successful management will be accomplished with either temporary urethral catheter or suprapubic cystostomy drainage. In severe cases, it has been necessary to divert pancreatic exocrine drainage from the bladder to the intestine. The most likely cause is traumatic disruption of urethral mucosa (usually from temporary Foley catheterization) with subsequent inflammation due to activated proteolytic enzymes from the exocrine pancreas.

**562.** A 67-year-old woman with steroid dependent chronic obstructive pulmonary disease has multifocal CIS of the bladder. The best management is intravesical:

A) BCG.
B) thiotepa.
C) doxorubicin.
D) mitomycin C.
E) valrubicin.

**Correct Answer** **D**

**Explanation** Intravesical BCG is established as the best agent for intravesical therapy for CIS. However, it is contraindicated in immunocompromised patients because of impaired efficacy and an increased risk of infectious complications. The next most effective agent is mitomycin C, which would be the best choice in this clinical circumstance. Valrubicin is only indicated for BCG refractory CIS.

**563.** Multicystic renal dysplasia is most frequently associated with:

A) vesicoureteral reflux.
B) tuberous sclerosis.
C) ureteral atresia.
D) family history of cystic disease.
E) renal failure.

**Correct Answer** **C**

**Explanation** The typical features of a multicystic kidney are an atretic ureter, lack of reniform outline, absence of the renal pelvis, noncommunicating cysts of varying sizes, and dysplastic parenchyma. Prior to the advent of ultrasonography, the identification of an atretic ureter on retrograde pyelography was an important diagnostic finding.

**564.** A five-year-old girl is treated for cystitis. She has urge incontinence four days per week and nocturnal enuresis. A VCUG shows no reflux. Physical examination is normal. The next step is:

A) DDAVP.
B) oxybutynin.
C) imipramine.
D) timed voiding.
E) observation.

**Correct Answer** **D**

**Explanation** Enuresis is a common problem in five-year-old children. Diurnal enuresis is present in 7-8%, and nocturnal enuresis in 15%. Pharmacologic management may be considered, but the initial treatment should be timed voiding. This will improve the enuresis and decrease the risk for subsequent infection.

**565.** During radical nephrectomy in a 50-year-old man, the superior mesenteric artery is divided. The bowel segment likely to maintain normal blood supply is:

A) duodenum.
B) jejunum.
C) ileum.
D) cecum.
E) ascending colon.

**Correct Answer** **A**

**Explanation** The duodenum is supplied by the pancreaticoduodenal and the gastroduodenal arteries which arise from the celiac trunk. All of the other bowel segments are supplied by branches of the superior mesenteric artery. Although ligation of the SMA may be well tolerated, assessment of bowel viability should be done. If feasible primary repair of the vessel should be undertaken.

**566.** A 68-year-old woman has recurrent ureteral clot obstruction of her solitary kidney that contains a large hypervascular tumor in the lower pole, comprising approximately one-third of the kidney. The other kidney had been removed five years ago for renal cell carcinoma. CT scan shows enlarged periaortic nodes and several small nodules in both lungs. Serum creatinine is 1.7 mg/dl when the kidney is not obstructed. The next step is:

A) partial nephrectomy.
B) radiotherapy to the renal tumor.
C) nephrectomy, then chronic dialysis.
D) intravenous epsilon aminocaproic acid.
E) selective embolization of arteries to the tumor.

**Correct Answer** **E**

**Explanation** Angioinfarction of renal tumors has been used both as a preoperative adjunct and as a palliative measure in patients with unresectable or metastatic tumors. A variety of agents have been used for embolization including absolute alcohol, autologous blood clot, gelatin sponges (Gelfoam), and Gianturco steel coils. The kidney is an end organ and thus, angioinfarction may be accomplished at minimal risk to adjacent vascular beds. Most patients develop a post-infarction syndrome characterized by ileus, fever, flank or abdominal pain, and leukocytosis. Pyelonephritis should be eradicated before embolization. Partial nephrectomy could be a last resort if embolization should fail. Radiotherapy is unlikely to stop bleeding and will cause severe renal damage. Intravenous epsilon aminocaproic acid will only help temporarily, if at all, and may be dangerous because it may produce firm, persistent clots.

**567.** A 47-year-old man with bladder exstrophy and bilateral ureterosigmoidostomies had been lost to follow-up for 20 years. Current evaluation reveals that he is healthy, empties every 2.5 hours, and has nighttime incontinence. He has a serum creatinine of 1.4 mg/dl with a mild hyperchloremic acidosis and has experienced two to three UTI's every year. An IVP shows prompt excretion with slight caliectasis bilaterally. The next step is:

A) barium enema.
B) spiral CT scan.
C) anal manometry.
D) sigmoidoscopy.
E) DMSA renal scan.

**Correct Answer** **D**

**Explanation** The most important issue for this patient is the risk of developing a colon cancer at the site of the ureteral-enteric anastomoses, which increases approximately 10% for each ten years after this form of diversion. This is best accomplished by sigmoidoscopy or colonoscopy, since radiographic studies might miss a small tumor. Since renal function has been relatively well-preserved and an IVP shows bilateral function, a renal scan is unlikely to add useful information. The occasional leakage is typical of patients with ureterosigmoidostomy and anal manometry is unlikely to help this situation. Mild hyperchloremic acidosis is also typical for this form of diversion and can be treated with oral replacement therapy without measurement of urinary electrolytes.

**568.** A 76-year-old man with diabetes develops a febrile UTI after TURP. Antibiotic therapy is administered and 48 hours later the urine culture is sterile. His clinical condition deteriorates and he has a temperature of 103°F. He becomes comatose, hypotensive, and has a grand mal seizure. Laboratory studies show: serum osmolality 500 mOsm/l; urine sugar 4+; and urine ketones negative. The most likely diagnosis is:

A) diabetic ketoacidosis.
B) brain abscess.
C) hyperosmolar coma.
D) gram-negative septicemia.
E) severe dehydration.

**Correct Answer** **C**

**Explanation** Increased insulin requirements are common during periods of physiological stress (i. e. infection, trauma, surgery, etc.). Nonketotic hyperglycemic coma (hyperosmolar coma) should be considered in those with: hyperglycemia > 600 mg/dl, serum osmolarity > 310 mosm/kg, no acidosis, serum bicarbonate > 15 mg/l and no significant ketosis. The onset of disorder may be insidious as significant ketosis is absent. Dehydration becomes profound. Lethargy and confusion develop and may be followed by seizures. Treatment includes fluid and potassium replacement and insulin administration. Diabetic ketoacidosis should be considered in a comatose patient with the following features: hyperglycemia > 300 mg/dl, acidosis with a blood pH < 7.3, serum bicarbonate < 15 mg/l, and serum or urine positive for ketones.

**569.** A 70-year-old man undergoes transperineal brachytherapy with <sup>125</sup>I seeds for localized prostate cancer. The preoperative AUA Symptom Score was 18. Three months after treatment he has significant obstructive voiding symptoms and a postvoid residual of 250 cc. There is no improvement with oral terazosin. The best management at this time is:

A) bicalutamide (Casodex).
B) tamsulosin (Flomax).
C) clean intermittent catheterization.
D) finasteride (Proscar).
E) TURP.

**Correct Answer** **C**

**Explanation** Urinary retention after transperineal brachytherapy is common in men with significant pre-treatment obstructive symptoms and is best managed by intermittent catheterization. <sup>125</sup>I has a half-life of 60 days and TURP is contraindicated in the first nine months after treatment because of the risk of radioactive exposure to the surgeon, operating room personnel, and pathologists. Response rates to all alpha blockers are similar and switching to another agent of the same class is unlikely to help. Either oral bicalutamide or finasteride will take several months to shrink the prostate.

**570.** The primary advantage of electrovaporization over transurethral prostatectomy in a 70-year-old sexually active man with a 40 gm benign prostate and a history of two myocardial infarctions is:

A) less dysuria.
B) shorter hospital stay.
C) decreased operative time.
D) less fluid absorption.
E) less retrograde ejaculation.

**Correct Answer** **D**

**Explanation** Relative to a TURP, electrovaporization is a longer surgical procedure which typically is associated with less bleeding, shorter hospital stay, and less fluid absorption. The most clinically relevant advantage of electrovaporization in the above case is the decrease in fluid absorption since the patient has a history of significant coronary artery disease and is likely to be at risk for developing congestive heart failure. The incidence of retrograde ejaculation is similar for both procedures. Following vaporization, patients typically experience more dysuria.

**571.** A 50-year-old woman has urinary frequency, occasional urge incontinence, and dyspareunia. She has a history of recurrent urinary infections. On physical examination, the bladder is not distended, but the urethra is tender to palpation. Which of the following would most reliably establish a definitive diagnosis:

A) IVP with postvoid film.
B) urethral calibration with residual urine assessment.
C) pelvic MRI scan.
D) cystoscopy.
E) urodynamics.

**Correct Answer** **C**

**Explanation** In this clinical setting, the most likely diagnosis is chronic urinary infection secondary to a urethral diverticulum. Although many of these lesions can be demonstrated on a VCUG, pelvic MRI is being used with increasing frequency to confirm the diagnosis. Endoscopic examination under general anesthesia with good relaxation and simultaneous digital compression of the anterior vaginal wall may be necessary to satisfactorily demonstrate these lesions. In some cases, a retrograde urethrogram, utilizing the double balloon compression technique, is necessary to demonstrate the diverticulum. These lesions are seldom demonstrated by IVP studies. Quantitative urine cultures, although positive in these cases, do not establish the diagnosis. Urodynamics are not indicated in patients with suspected local urethral disease unless there is clinical evidence of co-existent neurogenic disease.

**572.** A 24-year-old man with chronic renal failure managed by hemodialysis desires evaluation and treatment for erectile dysfunction. He is scheduled to undergo renal transplantation from a living-related donor in approximately one month. The best management is:

A) serum testosterone and prolactin.
B) nocturnal penile tumescence study.
C) penile duplex ultrasound.
D) intracavernosal injection therapy.
E) re-evaluation after transplantation.

**Correct Answer** **E**

**Explanation** A significant number of patients with chronic renal failure who are on hemodialysis experience sexual dysfunction. Following transplantation, a significant number of these men regain their pre-illness level of sexual function. In a report by Salvatierra, 64% of patients who had been transplanted less than three years, and 84% of patients transplanted for more than three years had regained their 'pre-illness' level of sexual activity. This patient is to undergo transplantation in one month. The best management plan is to wait and re-evaluate him after transplantation if his sexual function does not return to acceptable levels.

**573.** Recipients with blood type O may receive a kidney from a donor with blood type:

A) AB.
B) B.
C) A1.
D) A2.
E) A3.

**Correct Answer** **D**

**Explanation** ABO blood type incompatibility is considered a contraindication to transplantation because of the risk of preformed antibody mediated hyperacute rejection. The A2 subtype is a weaker antigen and does not induce agglutination when exposed to A1 reagents. A2 patients express lower amounts of antigen and do not express other subtypes in the kidney. With the use of plasmapheresis there are reports of successful transplantation of A2 donors with O recipients.

**574.** A 35-year-old man returns for percutaneous nephrostomy tube removal five days after undergoing successful nephrostolithotomy. As the catheter is being removed, brisk bleeding is noted. The best management is:

A) compression of the nephrostomy site.
B) reinsertion of the nephrostomy tube.
C) surgical exploration.
D) angiography and embolization.
E) removal of the nephrostomy tube and observation.

**Correct Answer** **B**

**Explanation** Blood loss requiring transfusion occurs in 1% to 11% of patients undergoing percutaneous renal surgery. Bleeding usually is a result of injury to the anterior or posterior segmental arteries. A transparenchymal posterolateral puncture minimizes the likelihood of vascular injury. Bleeding occurring during nephrostomy tract dilation should be controlled by passage of the next larger dilator. Persistent bleeding may be managed by stopping the procedure, placing and clamping the nephrostomy tube. When bleeding occurs when the nephrostomy tube is being removed, the nephrostomy tube should be reinserted to tamponade the bleeding vessel. When such measures fail, angiography and selective arterial embolization should be considered. Usually an arteriovenous fistula or pseudoaneurysm is identified. Persistent, gross hematuria occurring after nephrostomy tube removal may be managed similarly.

**575.** A 38-year-old woman with multiple sclerosis complains of urinary frequency, urgency, and urge incontinence. Urinalysis and culture are negative. Pelvic examination with a full bladder is normal. Residual urine one hour after voiding is 50 ml. The most likely diagnosis is:

A) detrusor hypocontractility.
B) detrusor hyperreflexia.
C) detrusor-external sphincter dyssynergia.
D) detrusor-internal sphincter dyssynergia.
E) poor bladder compliance.

**Correct Answer** **B**

**Explanation** In most series reporting urodynamic findings in patients with multiple sclerosis, detrusor hyperreflexia is seen in 50% to 90% of patients. Ultimately, striated sphincter dyssynergia develops in 30% to 60% of patients affected with multiple sclerosis. With a minimal residual urine, sphincter dyssynergia is unlikely, but should be ruled out when suspected by formal urodynamic studies.

**576.** During an ilioinguinal node dissection for metastatic penile carcinoma, which muscle is best suited for transposition over the femoral vessels in order to prevent subsequent vascular injury:

A) gracilis.
B) pectineus.
C) sartorius.
D) rectus femoris.
E) vastus lateralis.

**Correct Answer** **C**

**Explanation** The sartorius muscle extends from the anterior iliac spine to the medial aspect of the knee. The iliac extension may be separated from its attachment and sutured to the inguinal ligament, providing cover and protection of the femoral vessels. None of the other muscles are in an anatomic position to be useful for this purpose.

**577.** Which testosterone preparation is most likely to cause polycythemia or sleep apnea:

A) Androgel.
B) testosterone undecenoate.
C) Androderm.
D) Testoderm.
E) testosterone enanthate.

**Correct Answer** **E**

**Explanation** Testosterone replacement therapy is safe in hypogonadal men except those with carcinoma of the breast or known or suspected prostate cancer. Patients receiving testosterone therapy should be monitored with periodic DRE's, PSA, serum testosterone levels, and hematocrit. Polycythemia and sleep apnea can occur, especially with injectable testosterone therapy.

**578.** Indinavir sulfate (Crixivan) urinary stones:

A) are usually radiolucent.
B) occur in 55% of HIV positive patients.
C) fragment readily with lithotripsy.
D) are readily visualized on unenhanced CT scan.
E) require early urologic intervention.

**Correct Answer** **A**

**Explanation** Protease inhibitors (e.g. indinavir sulfate) are poorly soluble in urine and cause urolithiasis in 12-20% of patients within one year. Pure indinavir stones are radiolucent and, unlike uric acid stones, are not visualized on CT scans. Most indinavir stones can be managed conservatively. Their gelatinous nature explains the difficulty in treatment using lithotripsy techniques.

**579.** Ultrasound of a 28-week-old fetus demonstrates normal kidneys and amniotic fluid. The bladder is not visualized on several ultrasounds. The most likely explanation is:

A) persistent cloaca.
B) bilateral ectopic ureters.
C) maternal dehydration.
D) bladder exstrophy.
E) patent urachus.

**Correct Answer** **D**

**Explanation** The bladder is visible in the fetus at 14 weeks gestation. Nonvisualization of the bladder is seen in the fetus with poor renal function and oligohydramnios, cloacal exstrophy, bladder extrophy and persistent cloaca. The finding of normal kidneys and normal amniotic fluid excludes bladder agenesis and ectopic ureters. The bladder is visualized with a patent urachus. Prenatally diagnosed bladder exstrophy demonstrates an absent bladder, anterior abdominal mass and low-set umbilicus on ultrasound examination.

**580.** A useful adjunct for treatment of Candida albicans cystitis is:

A) mannitol.
B) ascorbic acid.
C) Mandelamine.
D) acid ash diet.
E) sodium bicarbonate.

**Correct Answer** **E**

**Explanation** An adjunct in treating Candida albicans urinary infection is urinary alkalinization. Alkalinization above pH 6.8 has a significant inhibitory effect on the multiplication of Candida. Sodium bicarbonate given orally is very effective for promoting urine alkalinization. Mannitol, an osmotic diuretic, has no effect. Ascorbic acid, Mandelamine, and acid ash diet tend to acidify the urine.

**581.** The most serious urodynamic finding in men with voiding symptoms secondary to multiple sclerosis is:

A) bladder capacity > 800 cc.
B) residual urine > 300 cc.
C) maximum flow rate < 15 cc/sec.
D) detrusor hypocontractility.
E) detrusor-striated sphincter dyssynergia.

**Correct Answer** **E**

**Explanation** Men with multiple sclerosis and detrusor-striated sphincter dyssynergia are at significant risk to develop upper urinary tract abnormalities. Besides detrusor-striated sphincter dyssynergia in men, decreased compliance resulting in sustained intravesical pressures > 40 cm of water is also a significant risk factor. Although all of the other answers may be seen in men with voiding symptoms and multiple sclerosis, their presence is not as significant as the initial finding of detrusor-striated sphincter dyssynergia.

**582.** A nine-year-old girl with adrenogenital syndrome is severely virilized, and her vagina enters the urogenital sinus immediately below the bladder neck. A cutback vaginoplasty is performed by incising the ventral wall of the urogenital sinus and distal vagina, and turning in a broad perineal skin flap to the apex of the vaginal incision. Postoperatively, she develops striking urinary incontinence which is most likely caused by:

A) vesicovaginal fistula.
B) disruption of the proximal urethra.
C) postoperative neurogenic bladder.
D) injury to the bladder neck.
E) reflux of urine into the vagina.

**Correct Answer** **B**

**Explanation** In patients with extensive virilization, the vagina may enter the urogenital sinus proximal to the urinary sphincter. In this setting, a cutback vaginoplasty may disrupt the proximal urethra and urinary sphincter and cause incontinence. The alternative is a pull-through vaginoplasty where the vagina is completely detached from the urogenital sinus, and the vaginal cuff is exteriorized onto the perineum.

**583.** A 61-year-man complains of new onset enuresis five years after cystectomy and orthotopic ileal neobladder. His daytime continence is good and the enuresis persists despite restricting fluids for several hours before retiring. The best management is:

A) Kegel exercises.
B) oral anticholinergics.
C) determine post-void residual.
D) augmentation of the neobladder.
E) artifical urinary sphincter.

**Correct Answer** **C**

**Explanation** The most likely cause of late onset incontinence following orthotopic ileal neobladder is mucous retention resulting in incomplete bladder emptying. Patients with this condition may still maintain good daytime continence by voluntary contraction of the external sphincter and frequent voiding, but at night pelvic floor relaxation, decreased urethral closing pressure, and hypertonic urine production with an obligate water loss overcome these compensatory behaviors. This problem is best managed initially by catheterization of the pouch to determine post-void residual (PVR) volume and irrigation of mucous. If the PVR is high, then the problem can be solved by having the patient catheterize just before retiring to ensure the pouch is completely empty.

**584.** Which medication is associated with an increased incidence of renal insufficiency in patients with either bilateral renal artery stenosis or renal artery stenosis in a solitary kidney:

A) hydrochlorothiazide.
B) doxazosin.
C) propranolol.
D) captopril.
E) furosemide.

**Correct Answer** **D**

**Explanation** Captopril causes a pharmacologic blockade of the renin-angiotensin system. Glomerular-capillary hydraulic pressure is determined by the balance between afferent and efferent vascular tone. Efferent arteriolar constriction serves to maintain an effective filtration pressure and glomerular filtration rate when renal arterial perfusion pressure is reduced. In bilateral renal artery stenosis or in renal artery stenosis of a solitary kidney, settings in which total renal blood flow is fixed, failure to autoregulate filtration rate would lead to elevations of the BUN and creatinine. Since evidence suggests that the renin-angiotensin system is responsible for this autoregulation, blockade by captopril would lead to transient renal insufficiency. None of the other drugs listed would produce this effect.

**585.** A 58-year-old woman complains of severe urinary incontinence with coughing or sneezing. Her abdominal leak point pressure is 30 cm H20 with urethral hypermobility, and there is no evidence of detrusor instability on CMG. The best management is:

A) endoscopic needle suspension.
B) pubovaginal sling.
C) retropubic suspension.
D) artificial urinary sphincter.
E) periurethral collagen injection.

**Correct Answer** **B**

**Explanation** An abdominal leak point pressure below 65 cm of water indicates intrinsic sphincter deficiency. Endoscopic or retropubic suspension procedures are almost always doomed to failure. Injectable agents can improve urethral sphincter deficiency but do not address the urethral hypermobility. The best management is a pubovaginal sling. An artificial sphincter is no better than a sling yet is associated with greater morbidity.

**586.** A two-month-old girl with a myelomeningocele closed at birth has a febrile urinary tract infection. Videourodynamics demonstrates Grade V/V bilateral reflux, a thick-walled bladder, and leakage around a 5 Fr. urethral catheter at 30 ml volume and a 50 cm H<sub>2</sub>O pressure. The next step is prophylactic antibiotics and:

A) vesicostomy.
B) enterocystoplasty.
C) cutaneous ureterostomy.
D) anticholinergics.
E) intermittent catheterization and anticholinergics.

**Correct Answer** **A**

**Explanation** This small volume, high pressure bladder may be even worse than urodynamics show, as the bladder volume and pressures are lowered by venting from vesicoureteral reflux. The upper tracts are at great risk. Vesicostomy provides immediate and complete freedom from high pressures with less subsequent reconstructive trouble than cutaneous pyelostomy. Augmentation of the bladder would be premature at this stage as it increases the complexity of care and starts a clock related to the known and unknown complications of enteric substitution. Even if eventually necessary, this could be safely delayed for several years. Anticholinergics and intermittent catheterization are unlikely to help with this very poor lower tract.

**587.** The renal structures best preserved in the presence of obstruction are the:

A) glomeruli.
B) proximal tubules.
C) loops of Henle.
D) distal tubules.
E) collecting tubules.

**Correct Answer** **A**

**Explanation** Glomerular changes are the last to occur with hydronephrosis. With long term obstruction, other more distal components of the kidney are destroyed first.

**588.** A 22-year-old man develops severe hemorrhagic cystitis ten days following bone marrow transplantation for acute myelocytic leukemia. He had received cyclophosphamide prior to his transplantation. He requires numerous transfusions despite therapy with hydration, continuous bladder irrigation, and a single intravesical instillation of 3% formalin. The next step is:

A) bilateral percutaneous nephrostomy drainage.
B) intravesical irrigation with 1% aluminum potassium sulfate.
C) intravesical instillation of 1% silver nitrate.
D) hypogastric artery embolization.
E) administration of sodium 2-mercaptoethane sulfonate (Mesna).

**Correct Answer** **A**

**Explanation** Severe hemorrhagic cystitis, defined as requiring transfusion of more than six units to maintain hemodynamic stability and refractory to conservative measures, is life-threatening. Intravesical administration of silver nitrate or alum is unlikely to be effective following the failure of formalin. Hypogastric artery embolization has been utilized but complications including gluteal claudication and necrosis of the bladder have been reported. Mesna is only effective when administered at the time of cyclophosphamide therapy since it binds to the active metabolite. Bilateral percutaneous nephrostomy tubes divert urine, which has intrinsic fibrinolytic activity, away from the bladder and more aggressive intravesical therapy can then be applied.

**589.** A 48-year-old woman is noted to have abnormal retention of isotope in the left renal collecting system on a bone scan that was performed during staging for breast cancer. The next step to evaluate the left kidney is:

A) serial creatinine measurements.
B) diuretic renogram.
C) cystoscopy and retrograde pyelogram.
D) antegrade pyelogram.
E) renal ultrasound.

**Correct Answer** **B**

**Explanation** Radionuclide bone scans may reveal delayed concentration of tracer in the kidney due to a generous collecting system or due to true obstruction. This finding should be confirmed by a functional study such as an IVP or nuclear renogram, which should help determine whether or not this represents a functionally significant obstruction. More invasive procedures are not indicated at this point.

**590.** A 65-year-old man cannot void following an abdominoperineal resection for rectal cancer. He is treated with intermittent self-catheterization and is continent between catheterizations. Three months later he still cannot void and is re-evaluated. He has a normal creatinine and PSA. Cystoscopy reveals occlusive lateral prostatic lobes and a median lobe which projects onto the trigone. A combined CMG-EMG demonstrates a slight decrease in compliance, but no definite detrusor contraction is seen. His EMG never silences. Preferred management is:

A) continue intermittent self-catheterization.
B) TURP.
C) bethanechol.
D) TUIP.
E) tamsulosin.

**Correct Answer** **A**

**Explanation** Patients who have undergone an abdominoperineal resection are at risk for developing denervation of not only their bladder but also the urethral sphincter mechanisms. Denervation of the smooth muscle in the area of the bladder neck and membranous urethra places these patients at considerable risk for incontinence following transurethral resection of the prostate. Because of the possibility of urinary incontinence, the preferred management of this patient is continued intermittent self-catheterization. Transurethral resection of the prostate and transurethral incision of the prostate may make the patient incontinent. Bethanechol does not work in the doses that can be administered orally. Tamsulosin will not be effective in the absence of effective detrusor contractions.

**591.** A 30-year-old man has a nine-month history of an increasing testicular mass which is now 3 cm in diameter. He undergoes a right radical orchiectomy which reveals an embryonal cell carcinoma with vascular invasion. There is no evidence of metastatic disease. Preoperative alpha-fetoprotein and beta-hCG are elevated. The best predictor of occult metastasis is:

A) size of tumor.
B) preoperative AFP.
C) vascular invasion.
D) preoperative hCG.
E) duration of symptoms.

**Correct Answer** **C**

**Explanation** Size of tumor, the time to presentation, and preoperative elevated serum markers are not the best indicators of subsequent metastases compared to embryonal cell carcinoma and vascular invasion. Of these two, vascular invasion is the best predictor.

**592.** A 21-year-old, C-5 quadriplegic man with detrusor-striated sphincter dyssynergia undergoes an external sphincterotomy. One year later, an IVP demonstrates a marked increase in hydronephrosis and a VCUG demonstrates no reflux. Detrusor leak point pressure is 60 cm H<sub>2</sub>O and the postvoid residual urine is 150 ml. Urine cultures reveal no growth. The most appropriate management is:

A) placement of a suprapubic catheter.

B) diazepam.

C) repeat sphincterotomy.

D) dantrolene sodium.

E) terazosin.

**Correct Answer** **C**

**Explanation** Despite having undergone an external sphincterotomy, this patient continues to have urinary retention and progressive hydronephrosis and an inadequate sphincterotomy is the most likely cause. The patient, therefore, should undergo a repeat sphincterotomy. Every attempt should be made not to place an indwelling catheter. Oral diazepam and dantrolene sodium are, in general, not effective in improving bladder function in patients with detrusor-striated sphincter dyssynergia. Terazosin is not likely to be helpful in this setting.

**593.** A 45-year-old man has progressive lower urinary tract symptoms. Physical examination of the prostate and PSA are normal. PSA is normal. Cystoscopically, the patient has minimal lateral lobe hypertrophy but marked elevation of the bladder neck and trigone. Both ureteral orifices are normal, and there is mild trabeculation of the bladder. Transrectal ultrasound shows a large midline cystic mass, aspiration of which reveals clear fluid without sperm. The most likely diagnosis is:

A) urachal cyst.
B) seminal vesicle cyst.
C) mullerian duct cyst.
D) cystadenoma of the seminal vesicle.
E) wolffian duct cyst.

**Correct Answer** **C**

**Explanation** A midline cystic structure in a younger man, above the prostate and not containing sperm, is most likely a mullerian duct cyst. A urachal cyst would be superior. Seminal vesicle lesions would be lateral.

**594.** A 22-year-old man treated with bleomycin, etoposide, and cis-platinum for a Stage II mixed germ cell tumor of the testis has a residual abdominal mass. Preoperative pulmonary function testing discloses a mild reduction in forced vital capacity. The most important factor in minimizing the risk of post-operative pulmonary problems after RPLND is limitation of:

A) inspired oxygen concentration.
B) the extent of resection.
C) perioperative steroids.
D) intravenous fluids.
E) the length of the incision.

**Correct Answer** **D**

**Explanation** A recent retrospective study has challenged the classical teaching that oxygen exposure increases the likelihood of pulmonary toxicity in patients treated with bleomycin. In this study the factors associated with postoperative pulmonary problems were positive fluid balance, amount of blood transfused, surgical time, estimated blood loss, and forced vital capacity, while the fraction of inspired oxygen was not a predictor of adverse outcome. Avoiding overhydration was the most important factor in limiting pulmonary problems.

**595.** A seven-year-old 30 kg girl with myelodysplasia is wet between catheterizations. She takes oxybutynin 5 mg three times per day. A VCUG shows a trabeculated bladder with Grade III/V reflux bilaterally. CMG shows a bladder pressure of 80 cm H<sub>2</sub>O at a volume of 100 ml. The best management is:

A) urethral dilation.
B) bilateral ureteral reimplantation.
C) enterocystoplasty.
D) increase anticholinergic drugs.
E) repeat CMG with Fogarty catheter, to occlude ureters.

**Correct Answer** **C**

**Explanation** This patient is at risk to develop upper tract damage because of her poor bladder compliance and a relatively high urethral resistance. Intestinocystoplasty will increase bladder volume and improve bladder compliance. The patient is on the maximum dose of oxybutynin for her weight and an increased dose would not likely benefit the child. Urethral dilation could be used, but this is a temporary measure and used mostly in diaper dependent children. Bilateral reimplants alone would not be treating the primary pathology. A repeat CMG is not needed. In children with VUR, the CMG may be misleading if the capacity and compliance appear adequate due to the 'pop-off' of the refluxing urine. However, if the compliance is poor one can proceed with treatment based on simple CMG.

**596.** The normal course of the ureter in relation to the uterine artery is:

A) posterior.
B) anterior.
C) medial.
D) lateral.
E) caudad.

**Correct Answer** **A**

**Explanation** The arterial supply to the uterus comes from the uterine artery which is a branch of the anterior trunk of the internal iliac artery. This vessel is of surgical importance since it crosses the ureter 2 cm from the cervix and provides a small branch to the ureter.

**597.** A 33-year-old man has sharply marginated, dusky red patches on his inner thighs. The scrotum and penis are not involved, and only mild inflammation is present in the inguinoscrotal folds. The peripheral borders of the patches are elevated and erythematous. The treatment of choice is:

A) topical nystatin (Mycostatin).
B) topical tolnaftate (Tinactin).
C) oral fluconazole (Diflucan).
D) topical triamcinolone (Aristocort).
E) oral prednisone (Deltasone).

**Correct Answer** **B**

**Explanation** The clinical description is most consistent with a tinea cruris infection caused by a dermatophyte. Trichophyton rubrum, Trichophyton mentagrophytes and Epidermophyton floccosum are the most common causative organism. This condition is relatively common and should be easily recognized by urologists. Topical tolnaftate is specific treatment for this fungus. Topically applied nystatin is effective only in candidiasis. Orally administered fluconazole is not indicated. Steroid therapy should not be administered.

**598.** The worst prognosis in a child with Wilms' tumor is associated with:

A) lymph node metastases, favorable histology.
B) pulmonary metastases, favorable histology.
C) local tumor spill, diffuse anaplasia.
D) microscopic residual disease, clear cell sarcoma.
E) diffuse tumor spill, favorable histology.

**Correct Answer** **C**

**Explanation** The most important prognostic factors for Wilms' tumor patients are histology and tumor stage. Of these two, histology is most important. Unfavorable histology patients account for 50% of tumor deaths although they represent only 10% of patients. Diffuse anaplasia and rhabdoid tumor have the worst survival. This is particularly true if the tumor extends outside the kidney since these tumors are resistant to standard Wilms' tumor therapies. Survival in clear cell sarcoma has improved with the addition of doxorubicin to the chemotherapy regimen.

**599.** In a patient with metabolic alkalosis, which clinical situation is associated with low urinary chloride excretion:

A) primary hyperaldosteronism.
B) Cushing's syndrome.
C) Bartter's syndrome.
D) diuretic abuse.
E) prolonged nasogastric suction.

**Correct Answer** **E**

**Explanation** Only in prolonged nasogastric suction would chloride loss decrease urinary chloride excretion. In Bartter's syndrome and diuretic abuse, urinary chloride would be excessive because of increased delivery of chloride to the distal nephron. In mineralocorticoid excess, alkalosis is maintained by continuous generation of bicarbonate by the distal nephron and no chloride depletion occurs.

**600.** A 15-year-old sexually active boy has a painless mass in the head of the left epididymis. He is placed on doxycycline. Six weeks later, the mass has not changed and a ultrasound shows a 1.5 cm echogenic mass in the head of the left epididymis. The next step is:

A) repeat course of doxycycline.
B) urine culture for chlamydia.
C) serial cultures for AFB.
D) biopsy of mass.
E) epididymectomy.

**Correct Answer** **C**

**Explanation** Tuberculous epididymis is the most common form of urogenital TB and should be considered when evaluating scrotal masses. This form of epididymitis is more likely to be considered a possible malignancy since it is painless and not of an acute nature. In most pediatric cases, there are other hematogenous areas of involvement and the urine culture may or may not be positive for AFB. Therefore, tuberculous epididymitis may be the first and only presenting symptom of genitourinary tuberculosis in cases where the IVP is normal and M. tuberculosis cannot be isolated. The diagnosis is made by culture of M. tuberculosis from a discharging sinus or after epididymectomy.

**601.** Following the initial interval of spinal shock, a quadriplegic who has difficulty with bladder emptying will most likely benefit from an alpha-adrenergic blocking agent when which of the following conditions develops:

A) detrusor-sphincter dyssynergia.
B) anal sphincter hyperreflexia.
C) detrusor hyperreflexia.
D) autonomic dysreflexia.
E) vesical areflexia.

**Correct Answer** **D**

**Explanation** Patients with autonomic dysreflexia are more likely to have inappropriate contraction of the bladder neck during voiding. This may respond to alpha-adrenergic blocking agents designed to relax bladder neck and prostatic smooth muscle. Although external sphincter dyssynergia and hyperflexia may also be present in such a patient and could respond to alpha-blocker therapy based on a central drug action, these are not as compelling reasons for treatment.

**602.** The beneficial effect of thiazides in preventing recurrent calcium stones is most directly enhanced by restriction of dietary:

A) sodium.
B) potassium.
C) magnesium.
D) protein.
E) carbohydrates.

**Correct Answer** **A**

**Explanation** Thiazide agents stimulate calcium reabsorption in the distal nephron. They also induce volume depletion which stimulates proximal tubular calcium and sodium reabsorption. The hypocalciuric action of thiazides is attenuated by sodium consumption.

**603.** The best predictor of immediate graft function following living donor renal transplantation is:

A) warm ischemia time.
B) cold ischemia time.
C) renal revascularization time.
D) total ischemia time.
E) donor kidney urine output just prior to nephrectomy.

**Correct Answer** **E**

**Explanation** While both cold and warm ischemic times have important roles in determining immediate function for cadaver renal transplant recipients, these times are negligible in living donor transplantation and rarely affect immediate graft function. The single best determinant of immediate function in live donor transplantation is the functional status of the kidney at the moment it is removed from the donor.

**604.** Ileal conduit stomal bleeding, incrustation, and plaque formation are usually due to:

A) allergy to appliance material.
B) Candida albicans infection.
C) chronic exposure to alkaline urine.
D) chronic exposure to acid urine.
E) E. coli infection.

**Correct Answer** **C**

**Explanation** Stomal bleeding, incrustation, plaque formation, and the formation of granulation tissue are complications in urinary conduit stomas. These complications are almost always secondary to alkaline urine exposure and poor hygiene of the collection device. Alkaline urine is often due to untreated urinary infection from urea splitting organisms or contamination of such organisms within the collecting device itself. Management includes treatment of urinary tract infection, urinary acidification, cutaneous soaks with weak acidic solution, treatment of the collecting device with acid solutions to rid contamination from urea splitting organisms, better fitting of the permanent appliance device, or a bedside collecting device to prevent bathing of the stoma in urine.

**605.** Persistent hypercalcemia that develops as a consequence of long-standing thiazide treatment may be indicative of:

A) hyperparathyroidism.
B) renal tubular acidosis.
C) medullary sponge kidneys.
D) hypervitaminosis D.
E) Fanconi syndrome.

**Correct Answer** **A**

**Explanation** Thiazides induce contraction of the extracellular fluid volume. This contraction results in hemoconcentration and, thereby, elevation of blood constituents including calcium. Hemoconcentration disappears in time (days to a few weeks) and transiently elevated blood chemistries revert to normal. A sustained elevation of serum calcium that occurs in the presence of a normal serum protein concentration suggests that the ionized calcium is elevated. Abnormally high ionic calcium is usually the result of hyperparathyroidism. Indeed, thiazides may be administered as a provocative test in the evaluation of patients with suspected normocalcemic hyperparathyroidism. “,”Menon M, Resnick M: Urinary lithiasis: Etiology, diagnosis, and medical management, in Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): CAMPBELL'S UROLOGY, ed 8. Philadelphia, WB Saunders Co, 2002, chap 96, p 3229.

**606.** A 72-year-old woman has a history of superficial transitional cell carcinoma of the bladder. An IVP shows a normal right kidney and collecting system, but a poorly functioning left kidney. Urine cytology is positive. Cystoscopy is normal. A left retrograde pyelogram is shown (see figure). Her serum creatinine is 1.5 mg/dl. The best management is:

A) ureteral stent and intravesical BCG.

B) BCG via percutaneous nephrostomy.

C) ureteroscopy and laser ablation.

D) ureterectomy and ileal ureter.

E) nephroureterectomy.

**Correct Answer** **E**

**Explanation** The history, clinical findings, and retrograde are most consistent with transitional cell carcinoma of the left ureter. When focal and noninvasive such tumors may be amenable to endoscopic manipulation with or without BCG, but the number of tumors visible on this retrograde make endoscopic management or treatment with BCG alone not practicable. Ureterectomy and ileal replacement might be an option in someone with a solitary kidney or impaired renal function, but in view of the normal creatinine, radiographically normal opposite kidney, and poor function of the left kidney, nephroureterectomy is the treatment of choice.

**607.** A 55-year-old man has a 16 Fr urethral catheter that cannot be removed because the balloon will not deflate. The best way to deflate it is to:

A) inject ether into the inflation port.
B) pass a guidewire down the inflation port.
C) puncture the balloon percutaneously with ultrasound guidance.
D) inject water into the inflation port until the balloon bursts.
E) pass a resectoscope sheath over the cut-off catheter to guide cystoscopic scissors.

**Correct Answer** **B**

**Explanation** A stiff guidewire passed down the inflation port will almost always clear the passage and let the water out without breaking the balloon. The other choices depend on breaking the balloon, often leaving a floating fragment that cannot be voided or irrigated out. Cystoscopy is then required to retrieve the fragment that, if left behind, will calcify and lead to infection. Ether cystitis could cause bladder wall damage and irreversible bladder contracture.

**608.** Which of these stone compositions is most resistant to fragmentation with SWL therapy:

A) calcium oxalate monohydrate.
B) calcium oxalate dihydrate.
C) hydroxyapatite.
D) uric acid.
E) struvite.

**Correct Answer** **A**

**Explanation** The fragility of stones determines their ability to be fractured with therapies such as SWL. The fragility of a stone will affect the outcome of therapy. Calcium oxalate monohydrate, brushite and cystine stones have been shown to be the least fragile and are less likely to respond to therapy with SWL.

**609.** A 62-year-old man with a long history of obstructive voiding symptoms has urine leakage from the perineum. A retrograde urethrogram demonstrates a 1.5 cm stricture of the bulbous urethra. The next step is:

A) direct vision urethrotomy.
B) suprapubic cystotomy.
C) biopsy of urethra.
D) excision and end-to-end anastomosis.
E) first-stage urethroplasty.

**Correct Answer** **C**

**Explanation** Carcinoma of the urethra should be suspected in those men who present with obstructive symptoms, a urethrocutaneous fistula and have a urethrogram with the findings as described above. Biopsy to exclude urethral carcinoma should be performed before attempts at repair are undertaken.

**610.** A 65-year-old man undergoes an abdominal-perineal resection for adenocarcinoma the rectum. Postoperatively, he has a poor urinary stream, incomplete emptying, and urinary retention. A CMG confirms detrusor areflexia. The cause for these symptoms is damage to the:

A) post-ganglionic parasympathetic nerves.
B) post-ganglionic sympathetic nerves.
C) pre-ganglionic sympathetic nerves.
D) pudendal nerves.
E) pelvic nerves.

**Correct Answer** **E**

**Explanation** The pelvic nerves are in close proximity to the rectum, and it is virtually impossible to remove the rectum without affecting the integrity of these structures. Thus, the parasympathetic motor supply to the detrusor is impaired at least temporarily. Although the post-ganglionic hypogastric plexus may be damaged, this should not affect detrusor contractility. The parasympathetic post-ganglionic nerves are in the wall of the bladder and will not be damaged by rectal surgery.

**611.** The metabolic abnormalities most frequently encountered in patients with cystic fibrosis who develop nephrolithiasis are:

A) hypercalciuria and hypocitraturia.
B) hypercalciuria and hyperuricosuria.
C) hyperoxaluria and hypocitraturia.
D) hyperoxaluria and hyperuricosuria.
E) hyperuricosuria and hypocitraturia.

**Correct Answer** **C**

**Explanation** Patients with cystic fibrosis are at risk for developing nephrolithiasis. The metabolic defects most commonly encountered in this patient population are hypocitraturia and hyperoxaluria, due to increased gastrointestinal oxalate absorption and rapid intestinal transport. Several measures can be taken to attenuate stone activity including increased fluid intake, administration of pancreatic enzymes, a low fat and low oxalate diet, and potassium and calcium citrate therapy.

**612.** A 35-year-old woman with T8 paraplegia underwent augmentation ileocystoplasty for urinary incontinence unresponsive to clean intermittent catheterization and anticholinergics. Post-operatively, she develops recurrent incontinence unresponsive to anticholinergics. Her urodynamic evaluation is demonstrated (see figure). The next step is:

A) ileovesicostomy.
B) continent catheterizable urinary diversion.
C) insert additional bowel patch into cystoplasty.
D) pubovaginal sling.
E) bladder neck closure and appendicovesicostomy.

**Correct Answer** **C**

**Explanation** This patient suffers from post-augmentation cystoplasty incontinence because of intermittent involuntary contractions of the augmented bladder as seen in the urodynamic study. This can occur despite adequate detubularization of the bowel or from inadequate bivalving of the bladder. When anticholinergics fail, the best treatment is inserting an additional patch of bowel into the cystoplasty. There is no evidence of urethral insufficiency on the urodynamic study as there is no leakage with Valsalva maneuvers. Therefore, procedures to either augment urethral resistance or close the urethra are not indicated. There is no indication to perform a supravesical urinary diversion since the lower urinary tract is still useful and can be further reconstructed.

**613.** A 68-year-old man has fever, chills, and left flank pain. Two years previously, he underwent radical cystectomy and ileal conduit diversion for Stage T3b transitional cell bladder cancer. Abdominal CT scan reveals left hydronephrosis, a normal right kidney, and a retroperitoneal mass surrounding the left ureter. The next step is I.V. antibiotics and:

A) observation.
B) left nephrectomy.
C) left percutaneous nephrostomy.
D) percutaneous biopsy of retroperitoneal mass.
E) retrograde insertion of left ureteral stent.

**Correct Answer** **C**

**Explanation** This patient is acutely ill with fever and an obstructed left kidney. The original tumor stage and current CT findings make obstruction of the left kidney by metastatic disease likely. The immediate need is for antibiotics and relief of renal obstruction. This is best accomplished by percutaneous nephrostomy.

**614.** A 56-year-old man with a solitary kidney and hypertension undergoes SWL for a 2 cm renal pelvic calculus. Immediately after the procedure, he has a blood pressure of 90/60 mm Hg, gross hematuria, and flank pain. A CT scan reveals a 10 x 12 cm perirenal hematoma. His blood pressure stabilizes with fluid resuscitation and two units of packed RBC's. The next step is:

A) continue supportive therapy.
B) ureteral stent placement.
C) arteriography.
D) percutaneous drainage of the hematoma.
E) renal exploration.

**Correct Answer** **A**

**Explanation** The likelihood of significant bleeding after SWL is approximately 1%, although perirenal hemorrhage may be noted in up to 25% of patients if CT or MRI is performed routinely after these procedures. Risk factors for bleeding include coagulopathy, bleeding dyscrasias, hypertension and concurrent treatment with medications that alter platelet function such as an NSAIDS (ibuprofen,ketorolac etc.). Intervention is rarely required. Most hematomas will resolve and either new onset hypertension or exacerbation of existing hypertension is unlikely. Renal function is also unlikley to be negatively influenced by the hematoma.

**615.** A 62-year-old man underwent an ileal conduit using a loop (Turnbull) stoma. He has abdominal discomfort and a recurrent large parastomal hernia after two failed repairs. The most appropriate treatment is:

A) conversion to colon conduit.
B) application of abdominal binder.
C) closure of the fascial defect with synthetic mesh graft.
D) transposition of stoma to opposite side of abdomen.
E) conversion to standard end-on stoma.

**Correct Answer** **D**

**Explanation** Parastomal hernias occur more commonly with loop than end-on stomas. The most effective method of such hernia management is by relocation of the stomal site to the other side of the abdominal wall and by closure of the hernia. Meticulous closure of the rectus fascia is the best method of preventing this complication.

**616.** A 28-year-old man with an ileal conduit for 20 years is scheduled for a renal transplant. He had posterior urethral valves treated as an infant. A CMG shows a 75 cc capacity bladder with uninhibited contractions, and his maximum voiding pressure is 50 cm H<SUB>2</SUB>O. After five days of bladder cycling, his bladder capacity increases to 200 cc. The best management is:

A) transplant into the existing ileal conduit.

B) bladder augmentation before transplant.

C) transplant into native bladder.

D) neobladder construction before transplant.

E) Indiana pouch construction before transplant.

**Correct Answer** **C**

**Explanation** Transplantation into a pre-existing urinary diversion is necessary when the bladder is absent, the recipient is totally incontinent and cannot undergo repair or irreparable bladder damage has occurred. Selected patients may undergo successful undiversion at transplantation even after many years of urinary diversion. These patients should have a careful review of old medical records and a review of voiding habits before diversion. They should undergo urodynamics, voiding cystourethrography and cystoscopy. In the absence of significant fibrosis, long term defunctionalized bladders should improve with restoration of urine flow. This may be assessed after 3-5 days of continuous bladder irrigation by suprapubic tube or intermittent catheterization. This should demonstrate a bladder capacity > 100cc and voiding pressure < 100 cm. water.

**617.** A 42-year-old woman with poorly controlled diabetes has a residual urine of 200 cc. She has had one episode of cystitis and currently has no voiding symptoms. The best way to prevent recurrent bacterial urinary tract infections is:

A) tight control of diabetes.
B) clean intermittent catheterization.
C) oral estrogens.
D) avoid bladder instrumentation.
E) suppressive antibiotic therapy.

**Correct Answer** **D**

**Explanation** There have been no studies to show that glucose in the urine predisposes to bacterial urinary infections. However, glucosuria may increase the colony count or lead to fungal infections. Similarly, any benefit from reducing the residual urine by intermittent catheterization is more than offset by the risk of colonization of the bladder. Using prophylactic antibiotics may not be warranted if the patient is otherwise normal and has an occasional UTI. Most important is to avoid instrumentation which may induce infections in individuals with small residual urines. Estrogens may help reduce UTIs in elderly women with atrophic vaginitis by reducing vaginal pH in the post-menopausal state.

**618.** A newborn boy has not voided for the first 18 hours of life. A renal ultrasound is obtained (see figure). The next step is:

A) observation.
B) VCUG.
C) MAG-3 renal scan.
D) urethral catheter.
E) serum creatinine.

**Correct Answer** **A**

**Explanation** The ultrasound demonstrates sonolucent renal pyramids which are a normal finding in infants. This is frequently mistaken for caliectasis. It is not uncommon for infants to have delayed voiding even beyond 24 hours. Simple observation of this child is all that is needed. “,”Walker RD III: Evaluation of the pediatric urologic patient, in Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): CAMPBELL'S UROLOGY, ed 7. Philadelphia, WB Saunders Co, 1998, vol 2, chap 53, pp 1619-1628.

**619.** The neurological condition associated with urinary incontinence and an open bladder neck is:

A) sacral agenesis.
B) cervical spinal cord injury.
C) Parkinson's disease.
D) neurosyphilis.
E) herniated L4-L5 disk.

**Correct Answer** **A**

**Explanation** Intrinsic sphincter deficiency with an open bladder neck can be caused by sacral cord neuropathy such as sacral agenesis or bilateral pelvic plexus injury. Parkinson's disease can cause detrusor hyperreflexia but not an open bladder neck. Neurosyphilis can cause a sensory neurogenic bladder and may be associated with overflow incontinence. “,”Pang D: Sacral agenesis and cauda spinal cord malformations. NEUROSURG 1993;32:755-779.

**620.** A 40-year-old woman has a large staghorn stone (surface area 3500 mm<SUP>2</SUP>) in her right kidney. The collecting system is grossly dilated with infundibular stenoses. Nuclear renography demonstrates that this kidney provides 30% of global renal function. Serum creatinine is 1.2 mg/dl. The best treatment is:

A) serial SWL with ureteral stent.
B) percutaneous nephrolithotomy.
C) percutaneous nephrolithotomy combined with SWL.
D) anatrophic nephrolithotomy.
E) nephrectomy.

**Correct Answer** **D**

**Explanation** This individual has an extremely large staghorn stone. Shock wave lithotripsy monotherapy would not be appropriate as it would be virtually impossible to render this patient stone free. When stone surface area is greater than 2,500 mm2, stone free rates with percutaneous based therapy are reported to be approximately 50%. The complex collecting system anatomy in this case would also be a hindrance with this approach. Nephrectomy should not be considered as the patient is young and the involved kidney has reasonable function. Anatrophic nephrolithotomy is the most appropriate treatment in this setting. “,”Lam HS, Lingeman JE, Barron M, et al: Staghorn calculi: Analysis of treatment results between initial percutaneous nephrostolithotomy and extracorporeal shock wave lithotripsy monotherapy with reference to surface area. J UROL 1992;147:1219-1225.

**621.** The optimal high volume, low pressure continent urinary reservoir is created by:

A) approximating a spherical configuration.
B) employing small intestine.
C) combination of small and large intestine.
D) an orthotopic location of reservoir.
E) disruption of peristaltic contractions.

**Correct Answer** **A**

**Explanation** The success of a continent reservoir depends primarily on its ability to store considerable volume of urine at low pressure. The most effective manner of attaining this goal is through the maximization of reservoir volume for a given surface area. This is best accomplished by using a spherical configuration.

**622.** Treatment of neurogenic bladder dysfunction with prevention of upper urinary tract damage is best determined by:

A) Valsalva leak point pressure.
B) detrusor leak point pressure.
C) EMG activity during detrusor contraction.
D) detrusor pressure at maximum flow.
E) VCUG.

**Correct Answer** **B**

**Explanation** Assessment of bladder compliance is critical in the management of patients with neurogenic vesicourethral dysfunction. This is best accomplished by measurement of the detrusor leak point pressure. This parameter primarily assesses detrusor compliance however is partially related to outlet resistance. When it exceeds 40 cm H20, upper urinary tract damage is probable. Valsalva leak point pressure and maximum urethral pressure are used to assess the urethra's ability to withstand increases in intraabdominal pressure, particularly in patients suspected of stress urinary incontinence. Detrusor pressure at maximum flow is the significant parameter measured in patients undergoing pressure-flow urodynamics for the evaluation of bladder outlet obstruction. Although increased EMG activity during bladder contraction may indicate evidence of detrusor external sphincter dyssynergia, this does not necessarily imply the presence of detrusor storage pressures predictive for upper urinary tract deterioration.

**623.** A 24-year-old man has recurrent cystine nephrolithiasis. Urine volume is more than three liters per day. He is taking alpha-mercaptoproprionylglycine (Thiola) and potassium citrate tablets three times per day with no side effects. He notes that his stools are filled with tablet-like material. The best recommendation is:

A) reassurance.
B) take the tablets before meals.
C) evaluate for malabsorption.
D) change Thiola to D-penicillamine.
E) change potassium citrate formulation.

**Correct Answer** **A**

**Explanation** Potassium citrate comes in a variety of formulations. Potassium citrate tablets are produced with a wax matrix to optimize their sustained release. It is not infrequent for these wax matrix tablet casts to be visualized in stools. This is most frequently seen in individuals with ileostomies. Patients should be reassured that the medicine is being delivered. To insure that the citrate is being absorbed, it would be appropriate to check the urine pH. If the urine is acidic, it may be necessary to increase the potassium citrate dose.

**624.** A 29-year-old man with infertility is azoospermic. He underwent right orchiectomy three years earlier for trauma. A review of the pathology from that procedure shows normal spermatogenesis. A left vasogram is shown (see figure). The most likely diagnosis is:

A) Sertoli-cell-only syndrome.
B) Klinefelter syndrome.
C) obstruction of the ejaculatory duct.
D) obstruction of the vas deferens.
E) epididymal obstruction.

**Correct Answer** **E**

**Explanation** Sertoli-cell-only and Klinefelter syndromes are bilateral, and thus ruled out by the history of a normal contralateral testis biopsy. Vasographic findings rule out obstruction of the vas and ejaculatory duct. Congenital absence of the epididymis or incomplete fusion of epididymis and vas deferens are thus the cause of azoospermia in this setting. “,”Sigman M, Jarow JP: Male infertility, in Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): CAMPBELL'S UROLOGY, ed 8. Philadelphia, WB Saunders Co, 2002, chap 43, pp 1475-1531.

**625.** In central (pituitary) diabetes insipidus, the nephron segment that contains the most dilute fluid is the:

A) proximal convoluted tubule.
B) descending limb of Henle's loop.
C) ascending limb of Henle's loop.
D) distal convoluted tubule.
E) collecting duct.

**Correct Answer** **E**

**Explanation** Central diabetes insipidus involves a defect in the production or release of antidiuretic hormone from the hypothalamo-neurohypophyseal system. Antidiuretic hormone affects the permeability of the distal tubule and collecting duct to water from the filtrate. With diminished antidiuretic hormone production, the distal tubule and collecting duct reabsorb less water from the filtrate yielding concentrated blood and dilute urine. The most dilute urine will be in the collecting duct.

**626.** A 24-year-old man sustains a rifle shot to the abdomen. Exploratory laparotomy reveals multiple small bowel perforations and a colonic injury. Exploration of a right retroperitoneal hematoma reveals partial transection of the mid-ureter. The ureter appears viable. The next step is:

A) placement of an internal stent.
B) primary closure.
C) nephrectomy.
D) segmental resection and ureteroureterostomy.
E) transureteroureterostomy.

**Correct Answer** **D**

**Explanation** High velocity bullets cause local extensive damage by the 'blast effect' on tissues. The visual appearance of the ureter at the site of injury is an unreliable sign of viability. Extensive local debridement and ureteroureterostomy is the best method to assure that local damage from the blast has not occurred. Primary closure or placement of an internal ureteral stent does not prevent extensive ureteral necrosis and the resulting sequelae from developing. Nephrectomy is not indicated. Transureteroureterostomy is unnecessary since massive ureteral loss has not occurred and a ureteroureterostomy can be successfully accomplished. “,”McAninch JW, Santucci RA: Genitourinary trauma, in Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): CAMPBELL'S UROLOGY, ed 8. Philadelphia, WB Saunders Co, 2002, chap 105, p 3707.

**627.** A 31-year-old woman had an ileal conduit urinary diversion at age ten years for a neurogenic bladder secondary to a lumbar myelomeningocele. She is now ten weeks pregnant. In addition to routine obstetrical care, she should have:

A) amniocentesis.
B) a Cesarean section at term.
C) no additional treatment.
D) prophylactic antibiotics.
E) serial renal ultrasounds.

**Correct Answer** **C**

**Explanation** An ileal conduit is not a contraindication to having a successful, normal pregnancy. Unless a specific indication exists, the routine obstetrical care of a pregnant woman with an ileal conduit is the same as that for a woman with no previous urinary tract surgery. Antibiotics are only required if the patient is symptomatic.

**628.** The earliest clinically detectable pubertal change in a boy is:

A) enlargement of the testes.
B) appearance of pubic hair.
C) deepening of the voice.
D) scrotal rugation.
E) increase in phallic length.

**Correct Answer** **A**

**Explanation** While the order of events in adolescence is subject to some variability, measurable testis enlargement is generally the first event, with downy pubic hair appearing close there after.

**629.** A 25-year-old male pedestrian is struck by an automobile. He has a left superior and inferior pubic ramus fracture as well as a fracture of the sacroiliac joint. He has a palpable bladder. No blood is noted at the meatus and the prostate is in normal position on digital examination. The next step is:

A) IVP.
B) retrograde urethrogram.
C) cystogram.
D) pelvic CT scan.
E) peritoneal lavage.

**Correct Answer** **B**

**Explanation** The most likely genitourinary injury in this patient is a prostatomembranous urethral disruption, as suggested by the type of pelvic fracture. A urethrogram is the easiest, most specific, and most rapid way to assess this possibility. “,”McAninch JW, Santucci RA: Genitourinary trauma, in Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): CAMPBELL'S UROLOGY, ed 8. Philadelphia, WB Saunders Co, 2002, chap 105, p 3707.

**630.** A 55-year-old woman has flank pain, fever, and malaise. Her serum creatinine is 1.6 mg/dl. A CT scan of the abdomen is performed (see figure). The most appropriate treatment is:

A) nephroureterectomy.
B) percutaneous drainage.
C) percutaneous nephrolithotomy.
D) long-term antibiotics.
E) nephrectomy.

**Correct Answer** **E**

**Explanation** The clinical presentation and CT scan is most consistent with xanthogranulomatous pyelonephritis. Lipid laden macrophages are commonly identified in renal tissue and urine. Such cells are not seen in the urine of patients with pyelonephritis. Although renal adenocarcinomas and transitional cell carcinomas have been reported to occur in such cases, they are rare and the clinical picture is most consistent with an inflammatory, not a neoplastic, disorder. The CT scan demonstrates the presence of a calculus and severe distortion of the renal parenchyma. In this case, complete removal of the kidney is warranted.

**631.** In a patient with Cushing syndrome due to adrenal adenoma, the changes in hormone secretion following a high dose dexamethasone suppression test are best represented by:

A) ACTH: <img src='images/up_arrow.gif' border=0> Urinary Free Cortisol: <img src='images/down_arrow.gif' border=0>

B) ACTH: <img src='images/up_arrow.gif' border=0> Urinary Free Cortisol: <img src='images/up_arrow.gif' border=0>

C) ACTH: <img src='images/horizontal_arrow.gif' border=0> Urinary Free Cortisol: <img src='images/horizontal_arrow.gif' border=0>

D) ACTH: <img src='images/down_arrow.gif' border=0> Urinary Free Cortisol: <img src='images/down_arrow.gif' border=0>

E) ACTH: <img src='images/down_arrow.gif' border=0> Urinary Free Cortisol: <img src='images/up_arrow.gif' border=0>

**Correct Answer** **C**

**Explanation** Patients with adrenal Cushing syndrome have autonomous adrenal production of cortisol which suppresses ACTH. Exogenous administration of either low-dose or high-dose dexamethasone is unable to alter the autonomous adrenal production. Therefore, it results in no change in either ACTH or urinary free cortisol. For pituitary adenomas, high-dose dexamethasone is capable of suppressing ACTH and urinary free cortisol production.

**632.** A 23-year-old man suffers severe scrotal, penile, and buttock burns. Four days later, the scrotal skin appears necrotic and malodorous and the testes are visible. After administering antibiotics and performing local debridement, the next step is:

A) local wound care and delayed reconstruction.
B) split thickness skin grafts to cover testes.
C) place testes in subfascial thigh pouches.
D) create lateral subcutaneous flaps to cover the scrotum.
E) place testes into infrapubic subcutaneous space.

**Correct Answer** **A**

**Explanation** With major loss of scrotal skin from infection and burn, the testes and spermatic cords need to be debrided and kept viable until scrotal reconstruction. While testes have been placed in various deep pouches for immediate coverage, these positions may interfere with future spermatogenesis in a young male. Bertini and Corriere have reported using saline dressings to cover exposed testes for several weeks until scrotal reconstruction or grafting is possible. Split thickness or mesh skin grafts are unsuccessful when there is infection, but may be useful later for reconstruction.

**633.** During a TURP, the surgeon resects into the rectum. A 1 cm laceration is seen. The next step should be:

A) prolonged urethral catheter drainage.
B) immediate suprapubic cystostomy and colostomy.
C) immediate perineal repair.
D) immediate suprapubic repair with an omental graft.
E) fulguration of the fistula edges.

**Correct Answer** **A**

**Explanation** Prostato-rectal fistulas after TUR will almost always heal with prolonged catheter drainage. If this fails, open repair may be necessary. Fulguration will make the fistula worse as it will cause tissue necrosis. A low residue diet and dilation of the rectal sphincter may be helpful.

**634.** The process of apoptosis involves:

A) cytochrome C inactivation.
B) cyclin-dependent kinase stimulation.
C) caspase activation.
D) telomerase stimulation.
E) autoimmune cell death.

**Correct Answer** **C**

**Explanation** Apoptosis is the well-controlled cellular cycle of cell mortality in which an orderly and predetermined set of processes result in autolysis of the cell. Cyclin-dependent kinase inhibitors are linked to the control of cell cycle and DNA replication. They are checkpoints in which the cell's DNA is checked for damage prior to release of cell replication signals. Telomere length functions as a type of mitotic clock quantifying the number of cell cycles. When the telomeres shorten with each cell replication and when reaching a critical length they inhibit DNA replication and are linked to cell senescence. Telomerases reverse this process and promote the immortality found in cancer and other cell lines. Ischemic necrosis and autoimmune cell death do not involve these well-controlled cellular processes but instead induce an intrinsic and extrinsic cascade of cytotoxic substances.

**635.** Inhibin is a substance derived from the testicle which mediates secretion of:

A) testosterone.
B) follicle-stimulating hormone.
C) luteinizing hormone.
D) gonadotropin-releasing hormone.
E) mullerian inhibiting factor.

**Correct Answer** **B**

**Explanation** Inhibin is a heterodimeric protein hormone in the transforming growth factor family of protein hormones including activin. Inhibin is secreted by the Sertoli cell for normal feedback inhibition of follicle-stimulating hormone (FSH).

**636.** The most important factor for successful vesicovaginal fistula repair using an omental interposition graft is:

A) the length of the omentum.
B) adequate mobilization of the gastroepiploic vascular pedicle.
C) adequate mobilization of the omentum by splenectomy.
D) ligation of the short gastric vessels.
E) vaginal closure using non-absorbable suture material.

**Correct Answer** **B**

**Explanation** In complicated vesicovaginal fistulae, a supravesical approach is appropriate. Since the surrounding areas may be poorly vascularized and fibrotic, omentum will supply good tissue into the area of the fistula. Even if the omentum is short, it can be mobilized to reach the pelvis if the full length of the gastroepiploic arch is mobilized. Turner-Warwick has stated '...even the shortest omental apron will reach the pelvis...' The spleen should not need to be mobilized for this. Nonabsorbable sutures should not be used because they may become exposed to the fistulous area of either the bladder or vagina and cause calculi or persistent fistulae. If the omentum overlaps the area of the fistulae, the fistulae will usually close even if the suture lines in bladder or vagina are tenuous, break down, or cannot be closed adequately.

**637.** Renal blood flow is autoregulated primarily by:

A) renal innervation.
B) the macula densa.
C) endothelin.
D) efferent arteriolar tone.
E) afferent arteriolar tone.

**Correct Answer** **E**

**Explanation** Autoregulation of glomerular filtration rate and renal blood flow occurs primarily through variation in afferent arteriolar resistance. Micropuncture studies support the hypothesis that changes in rate of fluid flow in the distal tubule elicit these changes in glomerular arteriolar resistance, a phenomenon known as tubuloglomerular feedback. Renal autoregulation is responsible for the relatively small changes in renal blood flow and glomerular filtration rates over wide ranges of perfusion pressures. This autoregulation is present in both innervated and denervated kidneys.

**638.** The increased risk for calculous disease during pregnancy is associated with:

A) increased parathyroid hormone levels.
B) absorptive hypercalciuria.
C) placental suppression of 1,25-dihydroxycholecalciferol.
D) decreased urinary glycosaminoglycans.
E) decreased urinary citrate levels.

**Correct Answer** **B**

**Explanation** During normal pregnancy there is a physiological state of absorptive hypercalciuria. PTH is suppressed and citrate and glycosaminoglycan excretion are increased.

**639.** Three days after an abdominal hysterectomy for cervical cancer, a 64-year-old woman has leakage of urine and purulent material from the vagina. A cystogram is normal, but a retrograde pyelogram demonstrates a left ureterovaginal fistula and marked hydronephrosis. The right upper tract is normal. Management should be I.V. antibiotics and:

A) ureteroneocystostomy.
B) ureteral stent placement.
C) nephrectomy.
D) ureteroneocystostomy with psoas hitch.
E) transureteroureterostomy.

**Correct Answer** **B**

**Explanation** In the present case the fistula appears to be limited and ureteral obstruction is not complete, as retrograde injection of contrast outlines the proximal ureter. Placement of a ureteral stent may result in resolution of the fistula. If retrograde placement is not successful, an antegrade approach can be undertaken. If neither approach is successful, immediate surgical repair would be indicated. Although a ureteroureterostomy could be considered, given the location of the fistula and what appears to be infection, ureteroneocystostomy may be the best approach.

**640.** The nerves of the bladder most affected by capsaicin are:

A) unmyelinated and parasympathetic.
B) myelinated and parasympathetic.
C) unmyelinated and sympathetic.
D) myelinated and sympathetic.
E) myelinated, parasympathetic and sympathetic.

**Correct Answer** **A**

**Explanation** Myelinated A-delta and unmyelinated C-fibers are the predominant sensory nerves from the urinary bladder. The latter are nociceptive, synapse in the sacral cord in the region of the parasympathetic motor neurons, and are depleted of their active substances by capsaicin.

**641.** Which of the following is the most sensitive biochemical test for confirming the diagnosis of pheochromocytoma:

A) plasma free metanephrines.
B) plasma catecholamines.
C) urinary metanephrines.
D) urinary vanillylmandelic acid.
E) urinary catecholamines.

**Correct Answer** **A**

**Explanation** A number of biochemical tests are available to exclude or confirm the diagnosis of pheochromocytoma. Plasma free metanephrine testing is the most sensitive test (99%). Other acceptable clinical tests with lower sensitivities include urinary fractionated metanephrines (97%), plasma catecholamines (84%), urinary catecholamines (86%), urinary total metanephrines (77%), and urinary vanillymandelic acid (64%).

**642.** In a boy with a large ureterocele in a duplex system, the most compelling reason for combining a bladder reconstruction with partial nephrectomy is:

A) ipsilateral Grade 3 reflux.
B) contralateral Grade 3 reflux.
C) contralateral hydronephrosis.
D) bladder outlet obstruction.
E) sepsis.

**Correct Answer** **D**

**Explanation** Large ureteroceles can occasionally act as a ball valve causing bladder outlet obstruction and a stress pattern of urinary incontinence after toilet training. This occurs more often in males. Bladder outlet obstruction is often a reason for bladder reconstruction whether primarily or secondarily. Sepsis will respond to antibiotics and upper pole surgery. Reflux can be managed with prophylactic antibiotics and careful follow-up studies until it resolves or there are clear indications for intervention.

**643.** A 65-year-old man with severe rheumatoid arthritis has been on chronic corticosteroid therapy. He undergoes a TURP, and is given I.V. hydrocortisone 50 mg every six hours that day. On the first postoperative day, his serum sodium is 124 mEq/l. The most likely cause of the hyponatremia is:

A) lack of mineralocorticoid replacement.
B) salt-losing nephropathy.
C) dilutional hyponatremia from the TURP.
D) hypotonic I.V. fluids.
E) postobstructive diuresis.

**Correct Answer** **C**

**Explanation** The most likely cause of the decreased serum sodium is dilutional from fluid absorption during TURP. The patient may have adequate endogenous mineralocorticoids since aldosterone secretion is less depressed than cortisol secretion in patients on steroids. More importantly, the high dose of cortisol he received should compensate for any mineralocortical deficit since cortisol does have some mineralocorticoid activity. Patients who take a low to moderate dose of corticosteroid therapy do not usually require supplemental intravenous steroids.

**644.** Adrenal hemorrhage is most frequently associated with:

A) heparin induced thrombocytopenia.
B) trauma.
C) warfarin therapy.
D) sepsis.
E) adrenal adenoma.

**Correct Answer** **A**

**Explanation** Adrenal hemorrhage is an uncommon condition that is infrequently diagnosed while patients are alive. It has classically been associated with meningococcal septicemia. Recent series, however, have demonstrated it is most often associated with heparin induced thrombocytopenia. Sepsis, stress and warfarin therapy are rarer causes.

**645.** A 14-year-old boy with incontinence had posterior urethral valves resected as a neonate. The most likely etiology for his incontinence is:

A) occult neurogenic bladder.
B) sphincteric injury.
C) hyperreflexic bladder.
D) hypertonic bladder.
E) myogenic failure.

**Correct Answer** **E**

**Explanation** Adolescents with a history of valves may have one of several urodynamic patterns. In boys with incontinence, the most prevalent was poor contractility with resulting overflow incontinence. Although there may be elements of hyperreflexia or hypertonia, inadequate emptying due to myogenic failure is the most likely cause of his incontinence.

**646.** A 65-year-old diabetic man with a serum creatinine of 2.3 mg/dl is about to undergo a CT scan using a non-ionic contrast agent. Prevention of contrast-induced nephropathy is best achieved by prophylactic hydration and administration of:

A) acetylcysteine.
B) furosemide.
C) diphenhydramine.
D) mannitol.
E) prednisone.

**Correct Answer** **A**

**Explanation** Prophylactic oral administration of the antioxidant acetylcystine, along with hydration, prevents the reduction in renal function induced by non-ionic, low osmolar contrast agents in patients with chronic renal insufficiency. Although mannitol may be beneficial, it is not as effective as acetylcysteine.

**647.** For patients with a 1 cm proximal ureteral stone, placement of an internal stent at the time of SWL will result in:

A) a higher stone free rate.
B) a lower complication rate.
C) less hematuria.
D) increased irritative voiding symptoms.
E) reduced analgesic requirements.

**Correct Answer** **D**

**Explanation** A randomized study demonstrated that stent placement at the time of SWL in patients with 1-2 cm solitary renal stones or proximal ureteral calculi less than 2 cm did not improve stone free or retreatment rates, lessen pain or hematuria. However, stent insertion was associated with an increase in irritative voiding symptoms.

**648.** A 60-year-old woman complains of peristomal pain three days after undergoing a radical cystectomy and ileal conduit for bladder cancer. A 16 Fr. straight catheter is in the conduit; ureteral stents were not utilized. Her stoma was initially dusky, and is now black. The next step is:

A) remove conduit catheter.
B) loopogram.
C) bilateral percutaneous nephrostomies.
D) loop endoscopy.
E) observation.

**Correct Answer** **D**

**Explanation** Vascular thrombosis of the intestinal conduit is often related to excessive tension in the mesentery of the chosen bowel segment, a hematoma in the mesentery, or inadvertent ligation of the major blood supply to the conduit. This can lead to necrosis of the stoma or the entire bowel segment. The stoma may normally appear dusky at the termination of the procedure. However, a pink to red appearance of the stoma should develop over the ensuing hours or days. If the stoma worsens in color, the patient develops pain around the stoma, or an obvious urine leak occurs, stomal necrosis is likely. This problem should be corrected on a semi-emergent basis. Loop endoscopy should be performed to determine the extent of ischemia. Pressure from a 16 Fr Foley catheter is very unlikely to cause significant ischemia.

**649.** Calcium reabsorption induced by parathyroid hormone and Vitamin D occurs primarily in the:

A) proximal convoluted tubule.
B) collecting duct.
C) thick ascending loop of Henle.
D) distal tubule.
E) proximal straight tubule.

**Correct Answer** **D**

**Explanation** The site of action of both PTH and Vitamin D is on the distal tubule. Calcium resorption occurs in this region. Calcium is reabsorbed in the proximal convoluted tubule as well, but not under the influence of PTH.

**650.** A 49-year-old man had a lesion of the glans penis, biopsy of which revealed squamous cell carcinoma in situ. Physical examination now shows a well-healed scar and no inguinal adenopathy. The next step is:

A) partial penectomy.
B) laser fulguration of site of resection.
C) excision of previous scar.
D) total penectomy.
E) observation.

**Correct Answer** **C**

**Explanation** The lesion may have been cured by the first procedure and therefore options a, b, and d are too aggressive based on this information. Observation has the attendant risk of recurrence and the subsequent need for a more aggressive procedure.

**651.** A 12-year-old girl has recurrent UTIs. An ultrasound shows a large, thickened bladder wall and bilateral hydronephrosis. A VCUG shows no reflux and a large PVR. The next step is:

A) MAG-3 renogram.
B) spinal MRI scan.
C) urethral pressure profile.
D) sphincter EMG during voiding.
E) cystoscopy and urethral dilation.

**Correct Answer** **D**

**Explanation** Dysfunctional voiding can be quite severe in its consequences. Reflux can be associated and/or secondary to this problem and corrective surgery may fail if the voiding disorder is not primarily addressed.

**652.** Non-adrenergic, non-cholinergic contraction of detrusor smooth muscle is mediated primarily by:

A) nitric oxide.
B) vasoactive intestinal polypeptide (VIP).
C) adenosine triphosphate (ATP).
D) cyclic guanosine monophosphate (cGMP).
E) enkephalins.

**Correct Answer** **C**

**Explanation** Postganglionic parsympathetic neurons release acetylcholine which activates muscarinic cholinergic (primarily M2 and M3) on the detrusor and elicits a contractile response. Preganglionic and postganglionic neurons also contain purines such as adenosine triphosphate (ATP) and adenosine which produce depolarization of bladder smooth muscle and contraction by stimulation of purinergic receptors. Nitric oxide, cGMP, VIP, and enkephalins either have no effect on bladder contraction or are inhibitory.

**653.** Placement of a ureteral stent in an unobstructed system will result in:

A) increase in ureteral contractility.
B) decrease in ureteral contractility.
C) atrophy of the ureteral mucosa.
D) atrophy of the ureteral smooth muscle.
E) decrease in intrapelvic pressure.

**Correct Answer** **B**

**Explanation** A number of changes occur after placement of a ureteral stent including: hyperplasia and inflammation of the urothelium, smooth muscle hypertrophy, increased intrapelvic pressure, a decrease in ureteral contractility and vesicorenal reflux.

**654.** During the first three years of life, hymenal morphology demonstrates progression of its:

A) redundancy.
B) external ridging.
C) notching.
D) annular configuration.
E) crescentic configuration.

**Correct Answer** **E**

**Explanation** Hymenal development during the first 3 years of life demonstrates decreased notching and the prominence of external ridges as the hymenal tissue turns inward and becomes less redundant. The hymenal configuration in the majority of children shifts from annular, with tissue surrounding the vaginal orifice 360 degrees, to crescenteric, with an absence of tissue anteriorly. Physicians should be familiar with these effects of normal aging on the hymenal appearance so they can differentiate normal development from post-traumatic or infectious changes.

**655.** The co-administration of which of these drugs is most likely to prolong the half-life of sildenafil:

A) trimethoprim-sulfamethoxazole.
B) levofloxacin.
C) terazosin.
D) ritonavir.
E) omeprazole.

**Correct Answer** **D**

**Explanation** Sildenafil is primarily metabolized by the cytochrome P450 isozyme 3A4. Ritonavir in particular is a potent inhibitor of multiple cytochromes and causes elevated levels of sildenafil to persist for up to 48 hours.

**656.** The most frequent complication associated with an intestinal anastomosis using surgical staples is:

A) staple line bleeding.
B) anastomotic leak.
C) bowel obstruction.
D) mesenteric hematoma.
E) wound infection.

**Correct Answer** **A**

**Explanation** Because stapling devices evert the suture line and do not crush tissue, bleeding at the anastomosis is not uncommon and occasionally may require light electrocoagulation. All other complications listed are uncommon and do not occur in any different frequency than with hand-sewn anastomoses.

**657.** A 15-year-old boy is undergoing revision of a colonic pull-through. During the operation, the left spermatic vessels are ligated and transected above the iliac vessels. The vas deferens is intact. Both testes are palpable in the scrotum. The next step is:

A) observation.
B) intraoperative Doppler ultrasound of testis.
C) microvascular reanastomosis of the spermatic vessels.
D) epigastric arterial revascularization.
E) left orchiectomy.

**Correct Answer** **A**

**Explanation** The blood supply to the testis is primarily from the spermatic vessels and the deferential artery. In children with abdominal undescended testes, primary orchidopexy after ligation of the spermatic vessels is associated with a 50% rate of testicular atrophy. However, if the testis is left in-situ after spermatic artery ligation, blood flow will return to normal within 30 days due to improved collateral blood flow via the deferential artery. Therefore, no treatment is needed in this patient. A testicular scan will likely demonstrate decreased flow, but the findings will not alter management.

**658.** A 38-year-old man with Klinefelter syndrome has breast enlargement and weight loss. The next step is:

A) mammography.
B) abdominal and pelvic CT scan.
C) scrotal ultrasound.
D) serum LH level.
E) serum prolactin level.

**Correct Answer** **A**

**Explanation** Breast cancer is 20 times more frequent in men with Kleinfelter syndrome than in normals. Although routine screening mammography is not warranted, this patient has increasing gynecomastia and weight loss. The most critical condition to rule out is breast cancer.

**659.** A ten-day-old infant boy is hospitalized for failure to thrive. After his umbilical stump fell off, fluid has intermittently drained from the umbilicus. The umbilical fluid has a creatinine of 10 mg/dl and grows >10<SUP>5</SUP>cfu/ml of E. coli. The next step should be antibiotics and:

A) observation.
B) cannulation and injection of contrast.
C) VCUG.
D) closure of fistula.
E) urethral catheter drainage.

**Correct Answer** **C**

**Explanation** The differential diagnosis of a wet umbilicus in the infant includes patent urachus, omphalitis, simple granulation of the healing stump, patent vitelline or omphalomesenteric duct, infected umbilical vessel, and external urachal sinus. The finding of a urinary creatinine level in the fluid draining from the umbilical stump suggests a patent urachus. While probing the urachal tract may aid in diagnosis, a VCUG should confirm the diagnosis and fully evaluate the lesion and any associated bladder outlet obstruction.

**660.** Hypertension following renal parenchymal injury usually resolves within:

A) 10 days.
B) 6 weeks.
C) 3 months.
D) 6 months.
E) 1 year.

**Correct Answer** **B**

**Explanation** Hypertension following renal parenchymal injury usually resolves within 6 weeks from the time of injury.

**661.** A 65-year-old diabetic man develops erectile dysfunction following traumatic urethral disruption. The corporal artery blood velocities on duplex Doppler study are 8 cc/sec after a 20 microgram injection of prostaglandin E<SUB>1</SUB>. The most likely cause of the erectile dysfunction is:

A) psychogenic.
B) pudendal artery injury.
C) pudendal nerve injury.
D) diabetic neuropathy.
E) arterio-venous malformation.

**Correct Answer** **B**

**Explanation** The most likely etiology for erectile dysfunction following traumatic urethral disruption is injury to the cavernous nerves. The pudendal nerve provides sensory and motor innervation to the penis and bulbocavernosus muscles, respectively, and is not injured at the time of urethral disruption. The penile Doppler demonstrates inadequate blood flow increase to the penis in response to prostaglandin consistent with pudendal artery injury. The patient was potent prior to the injury, and therefore diabetes is not a likely etiology.

**662.** A 47-year-old calcium oxalate stone former wishes to go on a high animal protein, low carbohydrate, weight loss diet. The following changes in urinary chemistries are expected:

A) Calcium: <img src='images/up_arrow.gif' border=0> Uric Acid: <img src='images/up_arrow.gif' border=0> Citrate: <img

B) Calcium: <img src='images/up_arrow.gif' border=0> Uric Acid: <img src='images/up_arrow.gif' border=0> Citrate: <img

C) Calcium: <img src='images/up_arrow.gif' border=0> Uric Acid: <img src='images/down_arrow.gif' border=0> Citrate: <img

D) Calcium: <img src='images/down_arrow.gif' border=0> Uric Acid: <img src='images/down_arrow.gif' border=0> Citrate: <img

E) Calcium: <img src='images/down_arrow.gif' border=0> Uric Acid: <img src='images/up_arrow.gif' border=0> Citrate: <img

**Correct Answer** **B**

**Explanation** A number of metabolic changes occur with increased consumption of animal protein that are potentially deleterious for stone formers. These include increased calcium and uric acid excretion, decreased citrate excretion, and lowering of urinary pH.

**663.** The urodynamic evaluation of a six-year-old child with diurnal wetting without infection will usually demonstrate:

A) a small hypertonic bladder.

B) detrusor hypocontractility.

C) abnormal external sphincter activity on filling.

D) abnormal external sphincter activity during voiding.

E) normal external sphincter activity on filling and voiding.

**Correct Answer** **E**

**Explanation** The urodynamics of a child who wets day and night and who has infections will usually show a small capacity bladder with increased intravesical pressure. During filling, these patients will often demonstrate increased sphincteric EMG activity, and the EMG may not be completely quiescent during early voiding. In contrast, children with enuresis who do not have infection have the normal external sphincter response during filling and voiding.

**664.** A two-month-old, uncircumcised boy has an E. coli UTI with a temperature of 104<SUP>o</SUP> F. Physical exam is normal except for a phimotic prepuce. He responds well to antibiotics. The next step is:

A) circumcision.
B) circumcision and cystoscopy.
C) renal ultrasound.
D) VCUG and ultrasound.
E) DMSA renal scan.

**Correct Answer** **D**

**Explanation** While there is an association between UTI and being uncircumcised, this boy should have a formal evaluation of his urinary tract prior to any intervention for his prepuce. Phimosis is normal in neonates and does not necessarily indicate the cause of the UTI. The decision as to whether a circumcision should be performed should wait until his urinary tract has been evaluated with a VCUG and US.

**665.** In-vitro fertilization and intracytoplasmic sperm injection is associated with which of the following birth defects:

A) multicystic dysplastic kidneys.
B) ureteral atresia.
C) hypospadias.
D) UPJ obstruction.
E) vesico-ureteral reflux.

**Correct Answer** **C**

**Explanation** Assisted reproductive technology including in-vitro fertilization and intracytoplasmic sperm injection (ICSI) appears to double the risk of having a low birth weight, singleton delivery or a child with a major birth defect especially musculoskeletal or cardiovascular defects and hypospadias.

**666.** A 16-year-old girl with a neurogenic bladder remains incontinent despite an aggressive program of clean intermittent catheterization and anticholinergic medications. Videourodynamic evaluation demonstrates a flaccid, large capacity bladder and low urethral resistance. The best long-term management is continued intermittent catheterization and:

A) periurethral collagen injection.
B) bladder neck tubularization.
C) an artificial urinary sphincter.
D) a pubovaginal fascial sling.
E) a Mitrofanoff procedure.

**Correct Answer** **D**

**Explanation** The best treatment in this situation is the pubovaginal sling. An advantage of the sling procedure for postpubertal females is that the dissection between the urethra and the vagina can be performed transvaginally, an approach considered by many to be simpler than pelvic dissection required for placement of an artificial urinary sphincter. Bladder neck tubularization produces a significant reduction in bladder capacity and the frequent necessity for reoperations to correct problems with catheterization. Periurethral collagen injection can provide short-term improvement, however the long-term effectiveness remains open to question. A Mitrofanoff procedure will not solve the problem of low outlet resistance.

**667.** A 32-year-old man with decreased libido and erectile dysfunction has a serum testosterone of 100 ng/dl (normal 300-1000 ng/dl) and a prolactin of 150 ng/ml (normal 0-15 ng/ml). He has no visual field abnormalities, but an MRI scan demonstrates a 1 cm pituitary tumor. After three months of bromocriptine, his testosterone is 120 ng/dl, and he is still impotent despite normalization of his prolactin and a slight reduction in the size of the tumor. The most appropriate treatment is:

A) increase bromocriptine.
B) testosterone supplementation.
C) transsphenoidal pituitary surgery.
D) pituitary radiation.
E) hCG.

**Correct Answer** **B**

**Explanation** Many male patients with pituitary macroadenomas require testosterone replacement in addition to bromocriptine. The prolactin secreting tumor lowers LH secretion, probably by destruction of the pituitary cells which make LH. Higher doses of bromocriptine are not indicated if the prolactin is normal. Transsphenoidal surgery or pituitary radiation are not indicated if bromocriptine controls the tumor. Human chorionic gonadotropin would be an appropriate option if the patient was interested in fertility. However, in a single man whose chief complaint is impotence, testosterone replacement is easier to administer and less costly.

**668.** Anosmia in an infertile man is usually associated with:

A) a pituitary tumor.
B) Kartagener syndrome.
C) Kallmann syndrome.
D) Young syndrome.
E) immotile cilia syndrome.

**Correct Answer** **C**

**Explanation** Anosmia is a characteristic component of hypogonadotropic hypogonadism (Kallman syndrome). These patients may have a variety of congenital midline defects. Patients with the immobile cilia syndrome and Kartagener syndrome have immobile sperm and immobile respiratory cilia. Young syndrome consists of azoospermia caused by epididymal obstruction, secondary to viscous secretions and chronic respiratory infections, but anosmia is not a characteristic. Pituitary tumors are more likely to cause visual rather than olfactory disturbances. “,” Whitcomb RW, Crowley WF Jr: Male hypogonadotropichypogonadism. ENDOCRIN METAB CLIN N AM 1993;22(1):125-143.

**669.** A seven-year-old girl with myelomeningocele has bilateral hydronephrosis and urinary incontinence despite clean intermittent catheterization and oxybutynin 5 mg TID. CMG reveals a pressure of 35 cm H<SUB>2</SUB>O at a volume of 100 ml, and a detrusor leak point pressure of 54 cm H<SUB>2</SUB>O at a volume of 120 ml. The next step is:

A) intravesical oxybutynin.
B) detrusor myomectomy.
C) tolterodine.
D) vesicostomy.
E) enterocystoplasty.

**Correct Answer** **E**

**Explanation** This patient has an extremely small capacity bladder with poor compliance. The patient is on maximal anticholinergic therapy. At this point urethral dilation or vesicostomy would not be the best choice. This is an older child and one should seek an alternative that would correct the dangerously high pressures, but also provide social continence. Enterocystoplasty would be the best option for this patient. Given that this patient has bilateral hydronephrosis, urgent attention is needed. Bladder augmentation will provide a low pressure reservoir with resolution of the hydronephrosis.

**670.** Which treatment of idiopathic priapism is most frequently associated with gangrene of the penis:

A) bilateral pudendal embolization.
B) pressure dressings.
C) exchange transfusion.
D) cavernosal-saphenous vein shunt.
E) needle irrigation of corpora.

**Correct Answer** **B**

**Explanation** Tourniquet-like dressings can cause penile ischemia resulting in gangrene. Surprisingly, gangrene is not reported after bilateral pudendal embolization.

**671.** A 40-year-old man underwent a vasectomy ten years earlier. He undergoes an end-to-end vasoepididymostomy, and sperm are noted in the epididymis. Six months after this procedure, semen analysis reveals azoospermia. The next step is:

A) end-to-end vasoepididymostomy.
B) epididymal sperm aspiration and IVF.
C) testis biopsy.
D) repeat semen analysis in three months.
E) donor insemination.

**Correct Answer** **D**

**Explanation** Delayed return of sperm in the ejaculate may occur after vasoepididymostomy. Men without sperm in the epididymal fluid at the time of the anastomosis will never recover sperm in the ejaculate. Forty-one percent of patients will have delayed appearance of sperm in the ejaculate which can take up to one year or longer. The ultimate mean sperm count will be similar in those with immediate and delayed return of sperm. Delayed anastomotic obstruction is also the same in both groups.

**672.** A six-year-old boy with a history of imperforate anus has persistent diurnal urinary incontinence. Evaluation includes an MRI scan showing the conus medullaris at the L-2 level. A CMG shows no postvoid residual, a flat filling curve with high volume detrusor instability, and normal voiding pressures. These findings suggest:

A) tethering of the spinal cord.
B) vesico-colonic fistula.
C) detrusor-sphincteric dyssynergia.
D) no significant uropathology.
E) intrinsic sphincteric deficiency.

**Correct Answer** **D**

**Explanation** Imperforate anus is accompanied by a high incidence of bony sacral and neurological anomalies that may lead to a neuropathic bladder. On the other hand, diurnal and nocturnal enuresis are common in six year olds. This youngster can completely empty the bladder volitionally; i.e., no postvoid residual. There is no evidence of spinal cord tethering in that the conus medullaris is in the normal adult position one expects by five years of age (upper border of L-2). A vesico-colonic fistula would be unlikely. The urodynamic study is not suggestive of detrusor-sphincter dyssynergia, and the detrusor instability at high volume is unlikely to suggest any serious underlying pathology.

**673.** A 14-year-old girl has primary amenorrhea. She is in the 25th percentile for height and has a webbed neck. Karyotype is 45 XO. The most likely genitourinary abnormality is:

A) renal agenesis.
B) horseshoe kidney.
C) vesicoureteral reflux.
D) UPJ obstruction.
E) vaginal agenesis.

**Correct Answer** **B**

**Explanation** This patient has Turner syndrome. These individuals can be recognized by their typical physical findings including short stature, webbed neck and shield chest. Individuals with the 45 XO karyotype usually exhibit all the stigmata of the syndrome. Patients with the 46 XY karyotype are at increased risk for dysgerminoma and gonadoblastoma and require gonadectomy. Horseshoe kidney occurs with increased prevalence in patients with Turner syndrome and a renal ultrasound is warranted.

**674.** A 65-year-old man has lethargy, malaise, and markedly diminished urinary stream. After urethral catheterization, he experiences a postobstructive diuresis that is managed by appropriate fluid replacement. The urine output is 1,500 cc daily. The serum creatinine and BUN are 6.8 mg/dl and 95 mg/dl respectively, and are unchanged three days later. The next step is:

A) continued observation.
B) retrograde pyelography.
C) dialysis.
D) renal ultrasound.
E) increased fluid replacement.

**Correct Answer** **D**

**Explanation** In patients with urinary obstruction and impaired renal function, postobstructive diuresis is not unusual. Typically, urinary catheter drainage produces improvement in the blood levels of creatinine, urea nitrogen, and electrolytes to normal levels. If significant improvement does not occur, one must first consider inadequate drainage of the upper urinary tract because the bladder is poorly drained (poorly functioning catheter) or because of supravesical obstruction. The latter should be evaluated using renal ultrasound. No data to suggest the need for immediate dialysis in this patient is provided.

**675.** During erection, blood volume and pressure in the corpora cavernosa increase due to:

A) contractile activity of polsters at arteriovenous junctions.
B) shunting of arterial blood into the lacunar veins.
C) increased arterial flow in the dorsal penile artery.
D) increased arterial flow and passive venous compression.
E) arteriolar dilation and active venous compression.

**Correct Answer** **D**

**Explanation** Penile erection occurs in response to excitatory parasympathetic outflow (S2-S4) which produces vasodilation of internal pudendal and cavernosal arteries. Arterial flow increases prior to a rise in intracavernous pressure. Combined with active relaxation of trabecular smooth muscle, venous channels are passively closed, allowing tumescence. Prior theories postulating anatomical structures called polsters have been shown to be merely atherosclerotic plaques or artifacts.

**676.** A 26-year-old-man with C6 level quadriplegia managed with condom catheter drainage undergoes a urodynamic study. During bladder filling, he suddenly develops a pounding headache, profuse facial flushing, and sweating. His systolic blood pressure is 240 mm Hg. The next step is:

A) oral nifedipine.
B) drain the bladder.
C) intravenous chlorpromazine.
D) oral terazosin.
E) reduce rate of infusion.

**Correct Answer** **B**

**Explanation** Autonomic hyperreflexia (dysreflexia) occurs in patients with spinal cord injury above the T6-T8 level due to a massive unopposed sympathetic response to nociceptive stimulation of afferent impulses, commonly arising from the bladder or rectum. Although the acute effects of this syndrome can be prevented with ganglionic or alpha-adrenergic blockade, the most effective treatment once symptoms begin is removal of the offending stimulus, in this case, emptying the bladder.

**677.** A 50-year-old woman undergoes radical nephrectomy. Pathology reveals collecting duct carcinoma with invasion of the perinephric fat and microscopic involvement of one hilar node. Her metastatic evaluation is otherwise negative. The next step is:

A) observation.
B) radiation therapy to the flank.
C) cisplatin and 5-FU.
D) interleukin-2 and alpha-interferon.
E) M-VAC chemotherapy.

**Correct Answer** **A**

**Explanation** Collecting duct carcinoma is an unusual and aggressive type of renal tumor. While this patient is at risk for disease recurrence and progression, she is at this time without evidence of disease and no further therapy is indicated. There are no data that demonstrate efficacy of any form of adjuvant therapy.

**678.** Classic features of prune-belly syndrome include dilated tortuous ureters, atretic anterior abdominal musculature, and undescended testes. In addition, there is usually hypoplasia of the:

A) radius.
B) tibia.
C) prostate.
D) vas deferens.
E) epididymis.

**Correct Answer** **C**

**Explanation** The prune-belly syndrome is characterized by the presence of a large dilated bladder associated with dilation in the area of the proximal urethra. This dilation is not due to outlet obstruction related to posterior urethral valves but is usually secondary to saccularization of the urethra due to a very small or hypoplastic prostate. It is important to recognize that children with prune-belly syndrome rarely have urethral valves.

**679.** In a child with a febrile UTI, the antimicrobial drug that achieves therapeutic levels in the urine, but not in the tissue is:

A) ampicillin.
B) gentamicin.
C) nitrofurantoin.
D) trimethoprim.
E) cephalexin.

**Correct Answer** **C**

**Explanation** It is important to treat children who are toxic from urinary tract infections with an antibiotic which achieves adequate blood and urine levels. All of the above antibiotics achieve adequate urine levels, but nitrofurantoin does not achieve adequate blood levels.

**680.** A 63-year-old man has left flank pain, gross hematuria, and a palpable left abdominal mass. He has lost 30 pounds in the last six months. CT scan reveals a 12 cm heterogenous left renal mass that involves the posterior abdominal wall and left mesocolon. Serum hematocrit is 27%. A bone scan reveals a sacral metastasis. The next step is:

A) radiation to the left flank.
B) systemic interleukin-2.
C) palliative nephrectomy.
D) diverting colostomy and radiation to the left flank.
E) left renal angioinfarction.

**Correct Answer** **E**

**Explanation** This patient has a symptomatic renal mass and a very poor prognosis. His poor performance status and bone metastases make it very unlikely that he will respond to therapy with biological modifiers. Percutaneous embolization of the mass should control the hematuria and also palliate his flank pain. Radiation therapy may provide some palliation but will not immediately control the hematuria. A diverting colostomy is not indicated unless obstruction develops and a palliative nephrectomy is likely to be excessively morbid in this patient with such a poor prognosis. Cytoreductive nephrectomy is not indicated before immunotherapy for patients with poor performance status and visceral metastases.

**681.** The diagnosis of testicular agenesis is confirmed by:

A) absence of an ipsilateral kidney.
B) absence of an ipsilateral vas deferens.
C) blind ending testicular vessels.
D) ipsilateral scrotal hypoplasia.
E) ipsilateral müllerian structures.

**Correct Answer** **E**

**Explanation** The key clinical sign indicating testicular agenesis rather than a vanished testis is the presence of ipsilateral mullerian structures. Testicular agenesis is much less common than the vanishing testis syndrome. True congenital absence of one testis is extremely rare and absence of both testes would result in a female phenotype.

**682.** Combined renal and liver transplantation is curative for which of the following:

A) amyloidosis.
B) primary hyperoxaluria.
C) Alport syndrome.
D) cystinosis.
E) Fabry's disease.

**Correct Answer** **B**

**Explanation** When performing renal transplantation, recurrence of the underlying renal disease which resulted in end stage renal disease is of significant concern. Renal amyloidosis, cystinosis, and Fabry's disease are all potentially treatable with renal transplantation despite significant recurrence. Alport syndrome is not associated with recurrence after transplantation. Simultaneous renal and liver transplantation will be curative in patients with end stage renal disease secondary to this process since the defect in oxalate metabolism occurs in the liver.

**683.** A 57-year-old woman has an incidentally discovered 3.0 cm lower pole mass in the right kidney. On CT scanning the mass is heterogeneous, appears to extend beyond the capsule of the kidney, and enhances after administration of I.V. contrast. Most of the mass measures +70 to +80 Hounsfield units but there is a small region within the tumor that measures -80 Hounsfield units. The left kidney appears normal. Appropriate management at this time is:

A) repeat CT scan in six months.
B) selective angiographic embolization.
C) laparoscopic cryoablation.
D) lower pole partial nephrectomy.
E) radical nephrectomy.

**Correct Answer** **A**

**Explanation** This patient has CT scan findings that are pathognomic of angiomyolipoma. Negative Hounsfield units confirm the presence of fat in this lesion, even though this can only be observed in a small region. No treatment is indicated in an asymptomatic patient with a relatively small angiomyolipoma but follow up with periodic CT scans is appropriate. Extension into the perinephric fat and even lymph node involvement can be found in association with angiomyolipoma and is thought to represent a secondary site of origin rather than a metastatic lesion. The presence of fat on CT scan alone is diagnostic.

**684.** A 24-hour-old neonate has a left scrotal mass which does not transilluminate. The most likely diagnosis is:

A) extravaginal torsion of the spermatic cord.
B) intravaginal torsion of the spermatic cord.
C) incarcerated hernia.
D) endodermal sinus (yolk sac) tumor.
E) torsion of a testicular appendage.

**Correct Answer** **A**

**Explanation** Neonatal torsion usually involves the entire spermatic cord and its tunics and is extravaginal, whereas torsion of the testicle in older children and young adults is intravaginal. Extravaginal torsion is an in-utero or perinatal event because the testicular tunics are loosely attached to the scrotum at this time of development. These attachments form quickly and, therefore, extravaginal torsion becomes unlikely beyond the newborn period. Controversy exists as to whether the opposite side should be pexed at the same time.

**685.** A 20-year-old man has recurrent gross hematuria and left flank pain related to exercise. Urinalysis reveals microhematuria, rare RBC casts, and 2+ proteinuria. Renal ultrasound is normal. The study most likely to be diagnostic is:

A) IVP.
B) diuretic renography.
C) renal angiography.
D) ureteroscopy.
E) renal biopsy.

**Correct Answer** **E**

**Explanation** Recurrent gross hematuria in young adults occurring after an upper respiratory infection or exercise is the typical presentation of IgA glomerulonephritis (Berger's disease). Back pain and renal colic due to clots may be associated with the hematuria which can persist for days or weeks and may recur. Though the course is chronic, young patients generally have a good prognosis. While renal insufficiency develops in approximately 25% of patients, a poor prognosis is more likely in those with older age, heavy proteinuria, hypertension or abnormal renal function at presentation. The underlying pathology evident on renal biopsy is proliferative and confined mostly to mesangial cells. These changes are usually limited to either some glomeruli or lobular segments of a glomerulus. Though deposits of IgA and IgG may be present on biopsy, these findings are not pathognomonic of the disease as mesangial deposits are found in other forms of glomerulonephritis. The presentation is classic for IgA nephropathy.

**686.** The parameter most predictive of a response to immunotherapy in patients with metastatic renal cell carcinoma is:

A) performance status.
B) pulmonary metastases.
C) prior nephrectomy.
D) hematocrit.
E) local recurrence after nephrectomy.

**Correct Answer** **A**

**Explanation** Mani et al. conducted a retrospective study of 84 patients with recurrent or metastatic renal cell carcinoma treated with biologic response modifiers. Multivariate analysis of prognostic factors in this patient population indicated that ECOG performance status, sarcomatoid histology and bone metastases were the most significant poor prognostic indicators. Other factors were less significant after adjusting for performance status. A patient's performance status prior to biologic response modifier therapy appears to be the most important predictor of response to treatment. Canobbio et al. also evaluated prognostic factors in 73 patients treated in a variety of phase II trials with Interferon-alpha and/or Interleukin-2. Using a multivariate analysis technique they also identified ECOG performance status and number of metastatic sites as the most important prognostic factors for survival.

**687.** As a part of normal renal function, most of the filtered solutes and water are returned to the systemic circulation by:

A) proximal tubular reabsorption.
B) proximal tubular secretion.
C) distal tubular secretion.
D) the countercurrent mechanism.
E) distal tubular reabsorption.

**Correct Answer** **A**

**Explanation** The normal GFR averages 130-180 l/day, a volume sixty times that of plasma volume. Therefore, most filtered solutes and water must be returned to the circulation. Tubular reabsorption accomplishes this phenomenon - mainly in the proximal tubule and then the loop of Henle.

**688.** The renal arterial disease associated with stable renal function to the affected kidney is:

A) atherosclerosis.
B) intimal hyperplasia.
C) fibromuscular hyperplasia.
D) medial fibroplasia.
E) perimedial fibroplasia.

**Correct Answer** **D**

**Explanation** Medial fibroplasia is the most common form of fibromuscular renal artery disease. It typically occurs in women between 30-50 year of age. It is associated predominately with hypertension and is rarely a cause of progressive renal ischemic atrophy. All other diseases listed are associated with progressive disease that can culminate in renal loss.

**689.** Deletions or mutations on chromosome 3 are most common in which histologic subtype of renal carcinoma:

A) clear cell.
B) chromophobe.
C) collecting duct.
D) medullary cell.
E) papillary.

**Correct Answer** **A**

**Explanation** Genetic alterations on chromosome 3 are common in the garden variety clear cell variant of renal cell carcinoma but are uncommonly found in the other histologic variants, suggesting distinct pathways to tumorigenesis.

**690.** A 65-year-old man has chronic urinary retention associated with pedal edema. His BUN is 75 mg/dl. He is catheterized and a brisk diuresis of 500 ml/hr ensues. Forty-eight hours later the BUN is normal and the ankle edema is gone, but the diuresis persists. The probable cause of the persistent diuresis is:

A) overload of fluid prior to relief of the obstruction.
B) increased urea content in the urine.
C) failure to decompress the bladder slowly.
D) abnormal ADH secretion.
E) decreased tubular sodium reabsorption.

**Correct Answer** **E**

**Explanation** Although early diuresis after relief of obstruction may be due to solute and water overload, in this instance the diuresis persists. This sodium-losing nephropathy is due to impaired tubular reabsorption of sodium.

**691.** A 28-year-old woman has headaches and blurred vision. Physical exam reveals bipedal edema and an S3 gallop. Her blood pressure is 190/80 mm Hg. Urinalysis shows 10-20 RBC/hpf. Serum creatinine is 1.2 mg/dl. Abdominal exam reveals a right flank mass. The most likely diagnosis is:

A) polycystic kidney.
B) adrenal hemorrhage.
C) renal artery aneurysm.
D) renal arteriovenous fistula.
E) renal artery dissection.

**Correct Answer** **D**

**Explanation** The presentation of a young woman with hypertension and wide pulse pressure, microscopic hematuria, flank mass, and congestive heart failure should immediately raise the suspicion of an AVF. While the other answers given could explain hypertension, the key in this patient is congestive heart failure which in young individuals would be associated with significant AVF and a renal mass.

**692.** The histologic variant of renal carcinoma that has the worst one-year survival is:

A) renal medullary.
B) clear cell with VHL syndrome.
C) collecting duct.
D) sarcomatoid.
E) multifocal, hereditary papillary.

**Correct Answer** **A**

**Explanation** Median survival for patients with medullary cell carcinoma, which is found primarily in patients with sickle cell trait, is only 4 months, as most of these tumors are unresponsive to therapy. Sarcomatoid and collecting duct variants of renal cell carcinoma are also associated with a particularly poor prognosis, but median survival in each case is significantly longer than in patients with renal medullary carcinoma, and long-term survivors have been reported with these histologic variants.

**693.** A 60-year-old man has a prolonged ileus for three weeks after radical nephrectomy complicated by wound infection. Hydration is maintained by intravenous fluids. Serum sodium, potassium, bicarbonate, chloride, and creatinine are normal. The patient develops neuromuscular irritability, tetany, and behavioral disturbances. The cause of these symptoms is most likely:

A) hypoglycemia.
B) hypomagnesemia.
C) hypoproteinemia.
D) hypocalcemia.
E) hypercalcemia.

**Correct Answer** **B**

**Explanation** Prolonged parenteral fluid and electrolyte therapy which doesn't include magnesium can result in significant depletion of this electrolyte. The symptoms of hypomagnesemia include neuromuscular irritability and disturbed cerebration. Any patient maintained solely on prolonged intravenous fluids should have serum magnesium levels determined, particularly if he fails to improve. Electrolyte replacement should include appropriate amounts of magnesium.

**694.** A 58-year-old incontinent woman with urethral hypermobility undergoes a needle suspension with bone anchors. Four months later, she develops recurrent incontinence. The most likely cause is:

A) urethrovaginal fistula.
B) suture breakage.
C) intrinsic sphincter deficiency.
D) loosened bone anchors.
E) suture cutting through pubocervical fascia.

**Correct Answer** **E**

**Explanation** Early failure of bladder suspension procedures is generally related to improper surgical technique. Fifty percent of early failures are due to sutures cutting through the fascia because they were tied too tight. Suture breakage or cutting through the rectus fascia where the sutures are tied are uncommon. Similarly, loosened or breakage of a bone anchor is rare. Similarly, most patients with intrinsic sphincter deficiency would continue to have stress incontinence immediately after a needle suspension. Urethrovaginal fistulas are rare in this setting.

**695.** A 45-year-old hypertensive man has an elevated 24 hour urinary aldosterone after a period of salt loading. CT scan of the adrenals is normal. The best study for localization of a surgically curable lesion is:

A) MRI scan.
B) adrenal venography.
C) MIBG scan.
D) adrenal venous sampling.
E) iodocholesterol scan.

**Correct Answer** **D**

**Explanation** Aldosterone secreting adenomas are unilateral and small in size (1-2cm). They may be smaller than the resolution of CT scanning. In this setting, adrenal venous sampling for aldosterone levels is the most sensitive assessment to identify a unilateral adenoma. An MRI scan offers no advantage over CT scan in this setting. Adrenal venography can be complicated by adrenal infarction and is rarely used.

**696.** On the eighth day of total parenteral nutrition, the solution is interrupted in order to administer two units of packed red cells through the central venous line to correct a slowly falling hematocrit. The patient suddenly develops hypotension, tachycardia, and hypothermia. The most likely cause for this clinical picture is:

A) air embolus.
B) Candida sepsis.
C) gram-negative sepsis.
D) hypoglycemia.
E) transfusion reaction.

**Correct Answer** **D**

**Explanation** Intravenous hyperalimentation (total parenteral nutrition) is an important therapeutic technique. Air embolism can occur either during insertion of the CVP line or during disconnect. It is characterized by vascular collapse and can be prevented by maintaining the patient in the Trendelenburg position. Both Candida and gram-negative sepsis are complications of hyperalimentation but are associated with fever. A transfusion reaction can take many forms such as allergic (hives), febrile (fever, chills, flushing), or hemolytic, but this patient's clinical picture is not typical for a transfusion reaction. The clinical picture here is characteristic of hypoglycemia which occurs when the high carbohydrate hyperalimentation solution is suddenly stopped. Persistence of high endogenous insulin production leads to a profound rebound hypoglycemia. Therefore, hyperalimentation should not be abruptly stopped.

**697.** Three weeks after a Marshall-Marchetti-Krantz procedure, a 40-year-old woman develops pelvic and suprapubic pain associated with temperatures to 101<SUP>o </SUP>F. She experiences difficulty adducting her thighs and has pain to palpation of her symphysis pubis. The most likely diagnosis is:

A) osteitis pubis.
B) osteomyelitis of pubis.
C) obturator nerve injury.
D) urinary extravasation.
E) pelvic abscess.

**Correct Answer** **A**

**Explanation** This patient exhibits classic signs and symptoms of osteitis pubis. Pelvic and suprapubic pain, fever, and difficulty with thigh adduction are classic findings with this disease. Osteitis pubis has been reported to occur in up to 2.5% of women who have undergone the Marshall-Marchetti-Krantz procedure. Pubic osteomyelitis is possible but is far less common than osteitis pubis. Obturator nerve injury (usually secondary to retractors) can occur following cystourethropexy but does not present with symptoms 3 weeks postoperatively. Urinary extravasation would be very rare 3 weeks postoperatively. The signs and symptoms are much more in keeping with osteitis pubis than they are with pelvic abscess.

**698.** A 55-year-old obese man with epigastric discomfort is noted to have a 5 cm right adrenal mass on CT scan. The mass measures -40 Hounsfield units. The next step is:

A) observation.
B) 24-hour urine for metanephrines.
C) MRI scan.
D) right adrenalectomy.
E) dexamethasone suppression test.

**Correct Answer** **A**

**Explanation** A mass with Hounsfield units between -30 and -140 is characteristic of an adrenal myelolipoma. These tumors are benign and are composed of lipid and myeloid tissue. No additional therapy or evaluation is required.

**699.** A 12-year-old boy undergoes resection of a large retroperitoneal tumor. He requires transfusion of five units of banked blood and receives 1500 cc of Ringer's lactate solution. An intraoperative PT and PTT are both elevated. The coagulation factors most likely deficient from his transfusion are:

A) IV and VII.
B) II and V.
C) V and VIII.
D) V and X.
E) VIII and X.

**Correct Answer** **C**

**Explanation** In patients who receive massive blood transfusion (one blood volume or more) coagulation defects as measured by the PT and PTT may be encountered. All the coagulation factors are well preserved in banked blood except the labile factors V and VIII. These labile factors have very short half-lives. They are replaced with transfusion with fresh frozen plasma.

**700.** Six months following a TURP for BPH, a 65-year-old man complains of intermittent incontinence which occurs during the day and at night. His peak urinary flow rate is 24 ml/second, and he can voluntarily interrupt his urinary stream. The best diagnostic study is:

A) urethral pressure profilometry.
B) urine cytology.
C) flowmetry with perineal EMG.
D) CMG.
E) cystoscopy.

**Correct Answer** **D**

**Explanation** Detrusor instability and sphincteric damage are the two most common causes of incontinence following TURP. In this individual, the fact that the incontinence is intermittent and occurs at night suggests a detrusor rather than a sphincteric-related etiology. The fact that the peak flow rate is 24 cc per second suggests that outlet obstruction has, in fact, been relieved. The most likely explanation for this patient's incontinence is the presence of involuntary bladder contractions, and these are best diagnosed with a CMG. Approximately 50% of patients with prostatic obstruction will show evidence of involuntary bladder contractions on cystometry. After relief of the outlet obstruction, these disappear in approximately 70% of cases over a period of one to twelve months.

**701.** The best predictor of long-term recurrence-free status in a patient with non-invasive bladder cancer is:

A) tumor size.
B) Rb mutation.
C) tetraploid flow cytometry.
D) negative random biopsies.
E) negative cystoscopy three months after a TURBT.

**Correct Answer** **E**

**Explanation** In patients with a well- or moderately-differentiated Stage Ta bladder cancer, the factor which best predicts the absence of recurrence is a post-TURBT negative cystoscopy at three months. The patient with no recurrence at three months cystoscopy has an 80% chance of no further recurrence. The other factors listed have a dramatic impact on progression rate but less impact on recurrence rate.

**702.** A six-week-old boy was born at 27 weeks gestation. His postnatal course has been complicated by respiratory distress, bronchopulmonary dysplasia, and a patent ductus arteriosus. He has required long-term diuretic therapy. A KUB reveals calcifications in the mid and upper regions consistent with bilateral renal calculi. The most likely mechanism for the formation of the stones is:

A) hypercalciuria.
B) hyperuricosuria.
C) obstructive uropathy.
D) Type I renal tubular acidosis.
E) Type II renal tubular acidosis.

**Correct Answer** **A**

**Explanation** Renal calculi occur in very low birth weight pre-term infants with a history of severe ventilatory problems and bronchopulmonary dysplasia. Many of these infants require long-term treatment with diuretic agents to control heart failure. The diuretic agent used most often is furosemide, which increases the rate of calcium excretion up to ten times normal. Chronic hypercalciuria from furosemide therapy has been shown to lead to nephrocalcinosis and calculus formation. Loss of calcium from chronic administration of furosemide may lead to secondary hyperparathyroidism and bone changes. Treatment includes switching from furosemide to thiazides.

**703.** A 38-year-old woman develops incontinence ten days after an abdominal hysterectomy and anterior colporrhaphy for a large cystocele. She complains of leakage that is constant, but increases with an increase in abdominal pressure. The most likely diagnosis is:

A) overflow incontinence.
B) transient detrusor instability.
C) stress incontinence.
D) ureterovaginal fistula.
E) vesicovaginal fistula.

**Correct Answer** **E**

**Explanation** All of these causes are possible, but a vesicovaginal fistula is the most likely diagnosis of her incontinence and should be looked for even if stress incontinence is present.

**704.** A 60-year-old man has a Grade III, T1 transitional cell carcinoma of the bladder. He receives the fifth of six weekly instillations of intravesical BCG. Twelve hours later he has a temperature of 39.5<SUP>o</SUP> C, difficulty breathing, and hypotension. The most likely cause of this complication is:

A) reflux of BCG into the upper tracts.
B) acute urinary tract infection.
C) traumatic catheterization.
D) more virulent strain of BCG.
E) impaired immunological state.

**Correct Answer** **C**

**Explanation** The majority of patients tolerate BCG instillation well. In 2,602 patients treated with different strains of BCG, high fever (>39 C) was noted in 2.9% of patients. Life-threatening BCG sepsis was noted in 0.4%. Fever greater than 39.5 C that does not resolve within 12 hours despite antipyretic therapy is potentially dangerous. Since most cases of BCG sepsis are associated with intravenous absorption of BCG it is recommended that BCG not be given until at least one week after tumor resection. In the patients who died from BCG sepsis, almost all cases had traumatic catheterization before instillation therapy or they were treated too early after transurethral prostatectomy or biopsy. Treatment should include isoniazid 300 mg, rifampin 600 mg, and ethambutol 1200 mg daily. After antitubercular drugs are started, corticosteroids may be given if the patient is toxic.

**705.** A five-year-old girl receives 100 mg Pyridium (phenazopyridine) for irritative bladder symptoms one day after bilateral ureteral reimplantation. An epidural catheter is in place infusing meperidine. She becomes dyspneic and cyanotic, and pulse oximetry shows an oxygen saturation of 75%. Treatment should be:

A) naloxone.
B) folic acid.
C) terbutaline.
D) methylene blue.
E) racemic epinephrine.

**Correct Answer** **D**

**Explanation** Pyridium (phenazopyridine) can produce methemoglobinemia in patients with normal renal function. This may be manifest by peripheral cyanosis and decreased oxygen saturation. Increasing concentrations of methemoglobin produce dyspnea, headache, fatigue, tachycardia, and dizziness. Treatment with methylene blue is rapidly curative. Phenazopyridine produces methemoglobin by direct oxidation of hemoglobin. Methylene blue acts as an electron acceptor to permit reduction of the methemoglobin. Patients with narcotic overdose and respiratory insufficiency are not typically dyspneic, but exhibit depressed respirations.

**706.** A 62-year-old woman complains of urge incontinence and difficulty initiating volitional urination 12 months after a needle suspension for stress incontinence. Her residual urine is 120 ml, and mid-voiding pressure is 52 cm/H<SUB>2</SUB>O during an uninhibited contraction. The best management is:

A) clean intermittent catheterization.
B) oxybutynin and timed voiding.
C) urethral dilation.
D) removal of one suspension suture.
E) transvaginal urethrolysis.

**Correct Answer** **E**

**Explanation** This patient has urethral obstruction as indicated by elevated voiding pressures and a significant urinary residual. Ditropan is contraindicated because of the obstruction, defined by the high voiding pressure and residual urine. Intermittent catheterization will not solve the basic problem and is not likely by itself to control the unstable bladder. Removal of one suture will not address the problem because the urethra is likely fibrosed in place. Hyperdilation of the urethra will not resolve the obstruction. The suspension should be taken down with urethrolysis, although stress incontinence can return in up to 12% of cases.

**707.** A 72-year-old man on chronic hemodialysis has gross hematuria. A 3 cm muscle-invasive transitional cell carcinoma is resected just lateral to the right ureteral orifice. Random biopsies of the bladder and prostatic urethra are negative. A CT scan shows no evidence of metastatic disease. He produces 100 cc of urine per day. The most appropriate management is:

A) surveillance cystoscopy in three months.
B) partial cystectomy with right ureteral reimplantation.
C) radical cystectomy and ileal conduit.
D) radical cystectomy and orthotopic neobladder.
E) radical cystectomy and bilateral nephroureterectomy.

**Correct Answer** **E**

**Explanation** The best management for muscle invasive bladder cancer is radical cystectomy. In a patient on chronic hemodialysis with essentially no urine output, there is little reason to preserve the kidneys, so the best choice for this patient is cystectomy and bilateral nephroureterectomy, which will simplify the procedure and the patient's recovery by obviating the need to create any form of urinary diversion.

**708.** Berry aneurysms of the circle of Willis are most frequently associated with:

A) renal aneurysms.
B) autosomal dominant polycystic kidneys.
C) autosomal recessive polycystic kidneys.
D) horseshoe kidney.
E) multicystic dysplastic kidneys.

**Correct Answer** **B**

**Explanation** Ten percent of patients with autosomal dominant polycystic disease have berry aneurysms and subarachnoid hemorrhage can be a lethal consequence. The high incidence of hypertension with autosomal polycystic kidney disease may contribute to the frequency of bleeding from the berry aneurysm.

**709.** A 65-year-old man has dribbling incontinence six weeks after an uncomplicated abdominoperineal resection for rectal carcinoma. One year prior to surgery, he had an AUA Symptom Score of 17 and a palpably enlarged, but benign prostate. A CMG shows a PVR of 200 cc and no detrusor contraction. The best treatment is:

A) neural stimulation.
B) TUMT.
C) suprapubic cystostomy.
D) clean intermittent catheterization.
E) indwelling urethral catheter and repeat CMG in two weeks.

**Correct Answer** **D**

**Explanation** During the course of abdominoperineal resection of the rectum, the sympathetic and parasympathetic nerves to the bladder and bladder neck may be injured. This results in detrusor areflexia and possible denervation of the external sphincter. Clinically this is manifested as urinary retention and possibly stress incontinence. Initial treatment should be clean intermittent catheterization while awaiting neurologic recovery which can take as long as one year. Once detrusor activity returns, the surgical treatment of benign prostatic hyperplasia may be considered if diagnosed urodynamically.

**710.** A 67-year-old man has adenocarcinoma of the bladder located on the lateral wall, 3 cm cephalad to the left ureteral orifice. Abdominal and pelvic CT scan and chest radiograph show no evidence of metastatic disease. The next step is:

A) colonoscopy.
B) IVP.
C) repeat TURBT.
D) partial cystectomy.
E) radical cystectomy.

**Correct Answer** **A**

**Explanation** Most adenocarcinomas of the bladder represent metastases from other primary adenocarcinomas such as colon, breast, or lung cancers. Hence, a primary source other than the bladder must be considered, and this patient should undergo colonoscopy for further evaluation prior to administration of definitive therapy.

**711.** A 42-year-old man is undergoing laparotomy for intraabdominal injuries and bladder rupture. Bleeding is noted in the perivesical area. After repair of bladder rupture, pelvic pressure does not stop the persistent oozing. Multiple blood transfusions are given and his core temperature is 35.5<SUP>o</SUP> C. The next step is:

A) intraoperative arteriography.
B) ligation of the hypogastric arteries.
C) intravenous aminocaproic acid.
D) close the abdomen and place patient in a MAST suit.
E) pack pelvis and close abdomen.

**Correct Answer** **E**

**Explanation** Most major bleeding from the pelvis following blunt trauma can be controlled by packing the pelvis and planned re-exploration and/or angiography with embolization. Ligation of hypogastric arteries or veins is seldom helpful in management because bleeding occurs from multiple pelvic veins. On-table arteriography is technically difficult, time consuming, and provides poor images and should therefore not be used. The use of a MAST suit in such cases has not been proven to be effective. Bleeding is due to trauma and unlikely to respond to medical therapy.

**712.** A 38-year-old, T-10 paraplegic man undergoes a cystoscopy and transurethral sphincterotomy. In the recovery room he is apprehensive, diaphoretic, and agitated. Vital signs reveal a blood pressure of 92/55 mm/Hg, pulse 120, respiration 24, and temperature 99.8<SUP>o</SUP> F. The most likely diagnosis is:

A) autonomic dysreflexia.
B) gram-negative septicemia.
C) cerebral hypoxia.
D) water intoxication.
E) urinary extravasation.

**Correct Answer** **B**

**Explanation** The spinal cord lesion is too low for this to be autonomic dysreflexia. Also, autonomic dysreflexia would produce a lowering of the pulse rate and an elevation of the blood pressure. Endotoxin released by circulating gram-negative bacilli can produce the symptoms and signs described in this patient and are the most likely cause of this patient's problems. Blood and urine cultures should be obtained at once and therapy with broad spectrum, systemic antibiotics, and intravenous fluids should be instituted simultaneously. “,”Karlsson AK: Autonomic dysreflexia. SPINAL CORD 1999;37:363-369.

**713.** A 63-year-old man is disease-free two years after BCG therapy for CIS and a Grade 2, Stage T1 bladder cancer. In addition to physical examination, cystoscopy, and urinary cytology, evaluation at this time should include:

A) urinary NMP-22 testing.
B) IVP.
C) selective upper tract cytology.
D) random biopsies of the bladder.
E) prostatic urethral biopsy.

**Correct Answer** **B**

**Explanation** The frequency of development of metachronous upper tract tumors in patients with superficial TCC of the bladder is not exactly known, but has been estimated to be very low (1-3%). The incidence is higher in patients with higher stage (T2+) primary lesions (2-8%). Patients treated for high-risk superficial TCC with BCG demonstrate a higher rate (13-18%) of recurrence over three years follow-up. The best approach to follow-up in patients treated with BCG is therefore the addition of upper tract imaging in the form of an IVP. Selective cytology as a routine practice is not recommended.

**714.** A 62-year-old man with erectile dysfunction following a nerve-sparing radical prostatectomy reports a lack of response 20 minutes after taking a 100 mg dose of sildenafil. The next step is:

A) placement of a penile prosthesis.
B) penile injection with PGE-1.
C) increase the dose of sildenafil.
D) counsel patient to wait at least 60 minutes before expecting a response.
E) add an alpha-1 adrenergic antagonist to next dose.

**Correct Answer** **D**

**Explanation** The onset of action of sildenafil is 50 minutes if taken on an empty stomach. This medication requires psychic or physical stimulation to facilitate a response.

**715.** The risk of hemorrhagic cystitis associated with cyclophosphamide may be reduced by concomitant treatment with:

A) Mesna.
B) acrolein.
C) ifosfamide.
D) oxopentanoic acid.
E) tetrahydrocannabinol.

**Correct Answer** **A**

**Explanation** Ifosfamide is an oxazaphosphorine and a structural analogue of cyclophosphamide. Acrolein is a toxic metabolite of these compounds that is, in part, responsible for the urothelial injury. Mesna protects the urothelium by binding the toxic metabolites. Tetrahydrocannabinol is useful for its antiemetic properties.

**716.** A 68-year-old man with intermittent gross hematuria has a large papillary tumor found within a bladder diverticulum. An IVP shows normal upper tracts and urine cytology is positive. Cold cup biopsy of the lesion reveals a Grade 2 TCC. Random biopsies of normal appearing bladder are negative. Further management should entail:

A) ureteral cytologies.
B) TURBT.
C) TURBT followed by BCG.
D) partial cystectomy.
E) radical cystectomy.

**Correct Answer** **D**

**Explanation** By definition a bladder diverticulum is lined by mucosa and lamina propria only. Therefore, a lesion within a diverticulum should be biopsied and not resected given the high risk for perforation and spillage of tumor cells. Random bladder biopsies should be performed, especially in the face of a positive cytology to guide the decision of partial cystectomy versus cystectomy.

**717.** During a cadaver donor nephrectomy, a normal main renal artery and a small accessory renal artery 2 mm in diameter supplying the lower pole of the left kidney are found. The best management is to:

A) declare the kidney unsuitable for transplantation.

B) perform donor nephrectomy with ligation of the small lower pole branch.

C) perform donor nephrectomy and anastomose smaller artery into side of main artery.

D) perform donor nephrectomy with en-bloc Carrel aortic patch for transplantation.

E) perform donor nephrectomy and implant each artery separately.

**Correct Answer** **D**

**Explanation** It is vital to preserve circulation through the lower pole artery, since most of the renal pelvic and ureteral blood supply comes from this vessel and its sacrifice will result in a high percentage of ureteral slough. The most effective way to preserve flow through this small vessel would be to resect the entire aortic segment involved, allowing implantation of the kidney utilizing the Carrel patch technique. In situ repair at the time of donor nephrectomy would be technically difficult. It would be unwise to transect both vessels, since the small one would be difficult to perfuse, and anastomosis in the recipient will be difficult unless microvascular extracorporeal reconstruction is performed. Failure to preserve polar renal arteries that supply either the lower pole and ureter or more than 10% of the renal parenchyma may lead to renal ischemia, segmental infarction, or urinary fistula formation. “,”Hodge E, Flechner S, Novick AC: Renal transplantation, in Gillenwater JY, Grayhack JT, Howards SS, Duckett JW (eds): ADULT AND PEDIATRIC UROLOGY. St. Louis, Mosby Year Book, 1996, pp 999-1068.

**718.** Estrogen is effective in controlling lower urinary tract infections in post-menopausal women by:

A) decreasing vaginal pH.
B) decreasing bacterial adherence.
C) altering the fecal reservoir of bacteria.
D) increasing antibody production.
E) increasing antibiotic diffusion into the vagina.

**Correct Answer** **A**

**Explanation** Pathogenic bacteria from the bowel most likely gain access to the lower urinary tract by direct extension and vaginal colonization. E. coli is rarely present in the vagina at a pH less than 4.5. Post-menopausal women have a vaginal pH of 5.2, and this decreases following estrogen therapy. A decrease in vaginal colonization with Enterobacteriaceae has been seen after such treatment. Answers B, C, D or E have not been affected by estrogen treatment.

**719.** After hemodialysis, serum PSA levels are:

A) Total <img src='images/down_arrow.gif' border=0> Free:Total Ratio <img src='images/horizontal_arrow.gif' border=0>
B) Total <img src='images/down_arrow.gif' border=0> Free:Total Ratio <img src='images/down_arrow.gif' border=0>
C) Total <img src='images/horizontal_arrow.gif' border=0> Free:Total Ratio <img src='images/horizontal_arrow.gif' border=0>
D) Total <img src='images/horizontal_arrow.gif' border=0> Free:Total Ratio <img src='images/down_arrow.gif' border=0>
E) Total <img src='images/down_arrow.gif' border=0> Free:Total Ratio <img src='images/up_arrow.gif' border=0>

**Correct Answer** **C**

**Explanation** While patients with renal failure have significantly higher levels of free PSA and free to total PSA ratio compared with controls, these values do not change after hemodialysis. It is also interesting that hemodialysis patients do not appear to have any age related increases in free or total PSA. “,”Sasagawa I, Kubota Y, Hayami S, et al: Serum levels of total and free prostate specific antigen in men on hemodialysis. J UROL 1998;160:83-85.

**720.** A five-year-old boy with bladder exstrophy underwent neonatal closure with bilateral posterior iliac osteotomies. He remains totally incontinent despite repair of his epispadias at two years of age. Studies reveal a bladder capacity of 50 cc with mild hypertonicity. The next step is:

A) continent urinary diversion.
B) augmentation cystoplasty.
C) bladder neck reconstruction.
D) injection of collagen at the bladder neck.
E) bladder neck reconstruction and augmentation cystoplasty.

**Correct Answer** **E**

**Explanation** Vesical neck reconstruction using a Young-Dees-Leadbetter procedure, or modification thereof, is the treatment of choice to provide continence for children with bladder exstrophy. This patient has a very small bladder capacity associated with decreased compliance. The single most important parameter in achieving urinary continence in patients with bladder exstrophy is bladder capacity. The best chance of producing complete urinary control is with simultaneous vesical neck reconstruction and bladder enhancement. Augmentation cystoplasty alone will not solve the problem of an incompetent bladder-neck. A rectus fascial sling does not solve the problem of a small bladder capacity. Collagen is unlikely to have durable success, but may help ascertain if the bladder will enlarge.

**721.** The disease that is caused by an organism similar to Klebsiella pneumoniae and is identified by the presence of Donovan bodies is:

A) chancroid.
B) granuloma inguinale.
C) lymphogranuloma venereum.
D) malakoplakia.
E) bacterial vaginosis.

**Correct Answer** **B**

**Explanation** Granuloma inguinale is a sexually transmitted infection of the skin and subcutaneous tissue of the inguinal and perineal area. It is caused by Calymmatobacterium granulomatis, an organism related to Klebsiella pneumoniae. The lesion is characterized histologically by rods with bipolar staining, called Donovan bodies, that are noted in monocytes in a smear of tissue from the ulcer base. The lesion may be confused with chancroid. Bacterial vaginosis or nonspecific vaginitis is usually detected by clue cells and caused by Gardenerella vaginalis.

**722.** In a patient with metastatic prostate cancer, a false-negative bone scan is suggested by:

A) non-visualization of the kidneys.
B) non-visualization of the liver.
C) asymmetrical isotope distribution in the bones.
D) visualization of the liver.
E) increased pulmonary visualization.

**Correct Answer** **A**

**Explanation** Patients with extensive bony metastases can occasionally have the majority of the technetium polyphosphate localized to the skeleton, giving the appearance of a normal scan. The characteristic finding of a 'super scan' associated with diffuse metastases is the lack of renal excretion of the radioisotope.

**723.** Spontaneous bladder perforation after enterocystoplasty is most likely the result of:

A) transmural cystitis.
B) mucous plug.
C) catheter trauma.
D) ischemic necrosis.
E) bladder calculi.

**Correct Answer** **D**

**Explanation** Ischemic necrosis of the augmented bladder wall may result from inefficient bladder emptying and chronic overdistension. Patient noncompliance with intermittent catheterization and mucus plugs may contribute to chronic overdistension, but are not the primary cause for bladder rupture after augmentation cystoplasty. A lack of detrusor sensation, chronic inflammation and the presence of bladder calculi may also be contributing factors.

**724.** A 70-year-old man with metastatic colon cancer and indwelling ureteral stents develops high volume gross hematuria. Arteriography demonstrates a fistula between the right common iliac artery and ureter. The next step is:

A) stent removal.
B) percutaneous nephrostomy.
C) embolize common iliac artery.
D) open surgical repair.
E) endovascular graft placement.

**Correct Answer** **E**

**Explanation** The majority of arterial ureteral fistulas occur in patients who have had extensive pelvic surgery, radiation therapy and indwelling ureteral stents. A high percentage involve the common iliac artery but may also involve the hypogastric artery. Patients can experience high volume bleeding resulting in hemodynamic instability. Emergency arteriography should be performed if this complication is suspected. While embolization of the common iliac artery will control hemorrhage, a femoral to femoral artery bypass is required to provide adequate circulation to the ipsilateral lower extremity. Placement of an endovascular stented graft or an autologous vein covered stent are less invasive options obviating the need for vascular reconstructive surgery in a patient with limited life expectancy. The ureteral stent should be removed and a percutaneous nephrostomy placed after this procedure to limit recurrent fistula formation.

**725.** The major risk associated with harvesting the sural nerve for grafting after resection of a neurovascular bundle during radical prostatectomy is:

A) painful neuroma.
B) sensory loss on the medial aspect of the foot.
C) motor loss of the calf muscles.
D) foot drop.
E) DVT.

**Correct Answer** **A**

**Explanation** Harvesting of the sural nerve is associated with sensory loss on the lateral surface of the foot, which typically is not functionally significant. The sural nerve is primarily a sensory nerve and muscular weakness should not occur. DVT is not common. No motor defect results. The major long-term complication is the formation of a painful neuroma that can develop at the proximal end of the transected nerve.

**726.** In pediatric patients with ventriculoperitoneal shunt infection following augmentation cystoplasty, the usual time to presentation, and the most frequent type of bacterial infection, is:

A) < 30 days; Gram positive.
B) < 30 days; Gram negative.
C) > 30 days; mixed growth.
D) > 30 days; Gram positive.
E) > 30 days; Gram negative.

**Correct Answer** **E**

**Explanation** Ventriculoperitoneal shunt infections following augmentation cystoplasty are seen in 4 to 20% of patients. They most commonly present greater than 30 days after the procedure with a gram negative organism isolated from the shunt. The bacteria usually is the same organism obtained from the preoperative urine culture. Symptoms include fever and gastrointestinal complaints and patients may or may not have neurologic signs. A shunt series usually demonstrates an obstructed peritoneal limb.

**727.** The major disadvantage of 5-flucytosine for treatment of Candida albicans pyelonephritis is:

A) nephrotoxicity.
B) poor renal concentration.
C) allergic reactions.
D) organism resistance.
E) hepatotoxicity.

**Correct Answer** **D**

**Explanation** Flucytosine is readily absorbed from the gastrointestinal tract. It is eliminated by glomerular filtration, and its dosage needs to be modified in the presence of renal insufficiency. Successful management of urinary tract infections is common, but primary resistance to the drug occurs in approximately 10% of infections caused by C. albicans and in up to 30% of infections caused by other species.

**728.** An 80-year-old man has newly diagnosed prostate cancer metastatic to his vertebrae, ribs, and bony pelvis. He has severe back pain and leg weakness. He is on coumadin for atrial fibrillation. Initial treatment should be:

A) stilbestrol.
B) LH-RH agonist.
C) LH-RH agonist and flutamide.
D) bilateral orchiectomy.
E) ketoconazole.

**Correct Answer** **E**

**Explanation** Impending spinal cord compression mandates immediate androgen deprivation in this patient. Of the treatments above, only bilateral orchiectomy and ketoconazole will provide immediate reduction of circulating androgens. Due to the patient's anticoagulation, ketoconazole is the safest of the two choices.

**729.** The nerve supply of the adrenal gland is:

A) parasympathetic to medulla.
B) sympathetic to medulla.
C) parasympathetic to cortex; sympathetic to medulla.
D) sympathetic to cortex and medulla.
E) sympathetic to cortex; parasympathetic to medulla.

**Correct Answer** **B**

**Explanation** The only nerves to the adrenal which have been demonstrated are sympathetic branches from T/10-L/1 coursing through the splanchnic nerves. Cortical innervation or parasympathetic innervation have not been demonstrated.

**730.** A 32-year-old woman has had right flank pain and spiking fevers to 102<SUP>o</SUP> F for three days. Her urine culture is positive. A CT scan without contrast is normal, but with contrast, a localized area of hypoattenuation is seen in the lower pole of the right kidney. The most appropriate management is I.V. antibiotics and:

A) observation.
B) DMSA scan.
C) retrograde pyelogram.
D) percutaneous drainage.
E) surgical drainage.

**Correct Answer** **A**

**Explanation** This patient has acute focal bacterial nephritis which usually responds to I.V. antibiotics. Drainage is rarely required.

**731.** A 49-year-old man with poor libido and erectile dysfunction has a testosterone level of 122 ng/dl (normal 200-800 ng/dl). He has mild bilateral testicular atrophy, and his prostate is approximately 15 gm size, without induration or nodules. His serum PSA is 2.4 ng/ml. The next step is:

A) antibiotics and repeat PSA in six weeks.
B) free testosterone level.
C) testosterone supplementation.
D) transrectal ultrasound guided prostate biopsy.
E) % free PSA.

**Correct Answer** **D**

**Explanation** The normal PSA for a man under 50 is < 2.5, and in light of the low testosterone, this patient should have a much lower PSA level. Hence, a PSA of 2.4 in this setting is suspicious for cancer and a prostate biopsy should be performed. There is no role for a % free PSA estimation, as it will not alter management at this time. Alternatively, the PSA could be repeated after testosterone replacement.

**732.** To perform an appendicovesicostomy, the blood supply to the appendix that must be preserved arises from a branch of which artery:

A) ileal.
B) anterior cecal.
C) posterior cecal.
D) ascending colic.
E) inferior mesenteric.

**Correct Answer** **A**

**Explanation** The appendix is supplied by the appendiceal artery, usually a branch of the ileal artery, itself a branch of the superior mesenteric artery.

**733.** E. coli causing uncomplicated cystitis in women has recently demonstrated the greatest increase in resistance to which antibiotic:

A) ampicillin.
B) nitrofurantoin.
C) cefazolin.
D) trimethoprim-sulfamethoxazole.
E) ciprofloxacin.

**Correct Answer** **D**

**Explanation** A number of studies have demonstrated both community acquired and hospital acquired uropathogen isolates, especially E. coli, resistance to trimethoprim/sulfa has risen in the past 5 to 7 years. While ampicillin has the highest absolute resistance rate, the greatest increase is trimethoprim/sulfa from 9% to 18% resistance in the past five years.

**734.** A 74-year-old man with metastatic carcinoma of the prostate has been receiving LH-RH treatment for two years. He is asymptomatic except for severe hot flashes. These are best managed by:

A) diethylstilbestrol.
B) megestrol acetate.
C) stopping LH-RH and performing bilateral orchiectomy.
D) flutamide.
E) stopping LH-RH and following serum PSA.

**Correct Answer** **B**

**Explanation** The optimal treatment of hot flashes from hormonal therapy is megestrol acetate (Megace). Although anecdotal reports suggest that DES may be helpful, significant gynecomastia may occur, as well as thromboembolic complications. Although intermittent hormonal therapy has been reported to diminish this problem, its efficacy in terms of treating prostate cancer remains to be established. Orchiectomy and adding flutamide are not likely to change this man's symptoms.

**735.** The best artery to use as a pedicle for a gastrocystoplasty when avoiding use of the antrum is the:

A) right gastroepiploic.
B) left gastroepiploic.
C) gastroduodenal.
D) right gastric.
E) left gastric.

**Correct Answer** **A**

**Explanation** The antrum should probably be avoided when performing a gastrocystoplasty because bladder distention might lead to increased gastrin secretion and ulcer formation. To avoid the antrum, the pedicle should come from the right and the optimal vessel is the right gastroepiploic.

**736.** A 25-year-old woman has urinary frequency and dysuria. Urinalysis demonstrates pyuria and bacteriuria. The nitrite dipstick test is negative. The most likely causative organism is:

A) E. coli.
B) Proteus mirabilis.
C) Klebsiella pneumoniae.
D) enterococcus faecalis.
E) Pseudomonas aeruginosa.

**Correct Answer** **D**

**Explanation** The ability of bacteria to reduce nitrate to nitrite is variable. Members of the Enterobacteriaceae family such as E. coli and Proteus species are able to reduce nitrite while enterococci, streptococci and Candidal species do not have this property. Since enterococci have unique antibiotic susceptibility, the nitrite test can be used to guide initial therapy.

**737.** A 33-year-old man with infertility has azoospermia. He has small testes bilaterally and a serum FSH of 15 mIU/ml (normal = 2-12 mIU/ml). Bilateral testis biopsies reveal rare spermatogonia and bilateral CIS. In addition to sperm retrieval, the next step is:

A) serial ultrasound and tumor markers.
B) repeat biopsy in six months.
C) bilateral inguinal orchiectomy.
D) radiation therapy to both testes.
E) systemic chemotherapy.

**Correct Answer** **D**

**Explanation** Due to the high association of subsequent development of overt carcinoma, testicular CIS maybe treated by orchiectomy, radiation therapy or chemotherapy. Radiation therapy is effective and may maintain Leydig cell function. In cases of bilateral disease bilateral orchiectomy would be a drastic recommendation. Given the potential toxicities of chemotherapy compared to radiation, this approach would be reserved for contralateral CIS in the setting of metastasis from the primary tumor. Prior to treatment, testicular sperm extraction should be considered as some men with maturation arrest on diagnostic biopsy will have sperm found with a more extensive biopsy.

**738.** The arterial blood supply to the renal medulla is from:

A) afferent arterioles.
B) efferent arterioles.
C) interlobar arteries.
D) arcuate arteries.
E) interlobular arteries.

**Correct Answer** **B**

**Explanation** The blood supply to the renal medulla is from the efferent arterioles of the juxtamedullary glomeruli. The vessels descend into the medulla by looping around the arcuate vessels, giving small branches to the capillary plexus of the medulla.

**739.** The most effective treatment of balanitis xerotica obliterans affecting the prepuce, glans penis, and the meatus is:

A) topical corticosteroids.
B) 5-fluorouracil cream.
C) circumcision.
D) meatal dilation.
E) meatoplasty.

**Correct Answer** **C**

**Explanation** BXO is an inflammatory condition of the glans and prepuce of unknown cause. It frequently produces significant phimosis and may produce complete obliteration of a glans penis. The etiology remains controversial, as is the treatment. In a study of 287 patients, Depasquale, et.al demonstrated 92% of patients undergoing circumcision alone had symptom relief and arrest of the progress of the disease. 3.9% of patients had development of glans ulceration requiring glans resurfacing and 4% had meatal stenosis significant enough to require meatotomy or meatoplasty.

**740.** A 24-year-old man is treated for a Stage III mixed germ cell tumor of the right testis by inguinal orchiectomy, four cycles of BEP chemotherapy, and postchemotherapy bilateral RPLND. He remains disease free with normal serum tumor markers for four years. Current physical examination and serum hCG are normal. Serum AFP is 27 ng/dl (normal < 10 ng/dl), and a CT scan of the chest, abdomen, and pelvis demonstrates a solitary 2 cm mass in the right retrocrural area. The next step is:

A) observation.
B) repeat AFP after I.M. testosterone.
C) additional BEP chemotherapy.
D) salvage chemotherapy.
E) excision of the mass.

**Correct Answer** **E**

**Explanation** Late recurrences more than two years after chemotherapy for advanced stage testis cancer are rare, potentially lethal, and usually unresponsive to additional chemotherapy. They are therefore best managed surgically when an identifiable lesion is found. Most late recurrences are pathologically pure teratoma, which has a more favorable prognosis than if viable cancer is found. Observation is not appropriate in a patient with a new retroperitoneal mass and any marker elevation. IM testosterone will suppress cross-reactivity of the beta subunits of LH and hCG, but will have no effect on AFP.

**741.** Retroperitoneal organs juxtaposed to the left kidney are:

A) adrenal, spleen, pancreas.
B) adrenal, pancreas, colon.
C) spleen, jejunum, colon.
D) adrenal, colon, spleen.
E) spleen, duodenum, pancreas.

**Correct Answer** **B**

**Explanation** Retroperitoneal structures that are juxtaposed to the left kidney are the adrenal, pancreas, and colon. The spleen and jejunum are intraperitoneal organs.

**742.** A 45-year-old woman has dysuria and a thin white vaginal discharge. Urinalysis is normal. Vaginal pH is 6.0. The application of potassium hydroxide to the discharge results in a fishy odor. Treatment is:

A) fluconazole.
B) doxycycline.
C) acyclovir.
D) metronidazole.
E) ciprofloxacin.

**Correct Answer** **D**

**Explanation** This patient has bacterial vaginosis, a polymicrobial infection usually including Gardnerella vaginalis, Bacteroides species, Mycoplasma hominis, Mobiluncus species, and Pepto Streptococci. The diagnosis is confirmed if at least two of the following three are present: 1) vaginal pH > 5; 2) positive 'whiff test' with KOH preparation; 3) presence of clue cells on a wet mount. Oral metronidazole is the preferred treatment.

**743.** A 32-year-old man had a right radical orchiectomy for pure seminoma, Stage I. The left testis had been removed at age 14 following a torsion. Two weeks after orchiectomy, his previously normal beta-hCG is elevated. The alpha-fetoprotein, chest X-ray, and abdominal CT scan remain normal. The next step is:

A) combination chemotherapy.
B) retroperitoneal lymphadenectomy.
C) radiotherapy and repeat serum markers in one month.
D) radiotherapy, exogenous testosterone, and repeat markers.
E) extended radiotherapy to mediastinum and supraclavicular nodes.

**Correct Answer** **D**

**Explanation** Removal of both testes will cause increased pituitary gonadotropin secretion, reflected by the elevated hCG. Giving intramuscular testosterone cypionate, 200 mg every two weeks, should suppress pituitary gonadotropin secretion and return the serum hCG to normal within two to three weeks. If hCG elevations persist, radiotherapy to periaortic nodes results in a 98% disease-free rate. If rising hCG is noted after radiotherapy, it would probably best be treated by combination chemotherapy.

**744.** A newborn boy has a large, firm, left flank mass palpated on routine physical examination. An ultrasound shows a solid renal mass. The most likely diagnosis is:

A) neuroblastoma.
B) mesoblastic nephroma.
C) hemorrhage into a hydronephrotic kidney.
D) mesonephric hamartoma.
E) Wilms' tumor.

**Correct Answer** **B**

**Explanation** Mesoblastic nephroma, an infiltrating solid renal tumor made up of spindle cells and grossly resembling a uterine fibroid, is the most common renal tumor of infancy. If completely excised, the patient is uniformly cured.

**745.** A 60-year-old alcoholic man is in the emergency room with a blistering, severe cellulitis of the scrotum and penis. He denies trauma or pain, and there is no tenderness of the wound. He has a low-grade fever and an elevated WBC count. Management should include parenteral antibiotics and:

A) urethral catheter drainage.
B) incision and drainage.
C) suprapubic cystostomy.
D) scrotal exploration.
E) operative debridement.

**Correct Answer** **E**

**Explanation** This is a clinical picture of necrotizing fasciitis (Fournier's gangrene) that is commonly seen in alcoholics, diabetes, the morbidly obese and other chronically immunosuppressed individuals. The lesions are usually painless because deep nerve damage occurs with inflammation and necrosis. Treatment includes broad antimicrobial coverage for aerobic and anaerobic organisms with drainage and debridement.

**746.** A 64-year-old man has painless right testicular swelling of three months duration. Urinalysis is normal, and testicular ultrasound reveals an enlarged right testis with multiple hypoechoic lesions. The most likely diagnosis is:

A) lymphoma.
B) chronic lymphocytic leukemia.
C) spermatocytic seminoma.
D) teratocarcinoma.
E) embryonal cell carcinoma.

**Correct Answer** **A**

**Explanation** Lymphoma accounts for about 5% of all testicular tumors. It is the most common of all testis tumors over the age of 50. The median age of occurrence is approximately 60 years. Lymphoma is the most common secondary neoplasm of the testis. Microscopically, all varieties of reticuloendothelial neoplasms, including Hodgkin's disease, have been described in the testis. The vast majority, however, are diffuse; of these, most are histiocytic.

**747.** A 14-year-old girl has gross hematuria. She is thin, chronically ill, and has an erythematous rash on her face and tongue. Radiologic studies show bilateral renal masses. Percutaneous needle biopsy shows both renal cell carcinoma and hamartoma. She most likely has:

A) neurofibromatosis.
B) Sturge-Weber syndrome.
C) von Hippel-Lindau disease.
D) tuberous sclerosis.
E) sarcoidosis.

**Correct Answer** **D**

**Explanation** Neurocutaneous syndromes are hereditary disorders characterized by tumors in multiple organs. This history and exam are typical of tuberous sclerosis. Hamartomas occur in neurofibromatosis and tuberous sclerosis. Renal cell carcinoma occurs in von Hippel-Lindau disease and tuberous sclerosis. The occurrence of both tumors in the same patient is most typical of tuberous sclerosis.

**748.** A 32-year-old woman with recurrent calcium renal stones has a serum calcium of 9.9 mg/dl and bicarbonate of 15 mEq/l. Her serum parathyroid hormone is at the upper normal level. Her fasting urinary pH is 6.0, and the fasting calcium/creatinine ratio is elevated. A 24-hour urinary calcium on a random diet is 350 mg. The most likely diagnosis is:

A) absorptive hypercalciuria.
B) renal hypercalciuria.
C) primary hyperparathyroidism.
D) RTA Type I.
E) RTA Type II.

**Correct Answer** **D**

**Explanation** This woman has metabolic acidosis as evidenced by the decreased serum bicarbonate and an inappropriately high urine pH. In the presence of acidosis, patients with distal renal tubular acidosis (Type I) are unable to acidify urine below a pH of 5.5. Thus the diagnosis of complete distal renal tubular acidosis can be made in this patient by the presence of metabolic acidosis and an inappropriately basic urine. A patient with Type II (proximal) renal tubular acidosis will acidify urine below a pH of 5.5 in the presence of metabolic acidosis. The low serum bicarbonate and low-normal serum calcium are not characteristic of normocalcemic hyperparathyroidism. Absorptive or renal hypercalciuria, likewise, are not associated with systemic metabolic acidosis. “,”Menon M, Resnick M: Urinary lithiasis: Etiology, diagnosis, and medical management, in Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): CAMPBELL'S UROLOGY, ed 8. Philadelphia, WB Saunders Co, 2002, chap 96, p 3229.

**749.** A 27-year-old man has bulky retroperitoneal adenopathy following radical orchiectomy for a mixed germ cell tumor. His chest X-ray is normal. Serum beta-hCG and AFP are markedly elevated. Liver enzymes are slightly elevated and the patient relates a history of ethanol excess. He receives three cycles of BEP. Restaging reveals a 3 cm retroperitoneal mass, a normal chest X-ray, and normal serum beta-hCG. However the serum AFP is 20 IU/ml (normal=0-9). The next step is:

A) retroperitoneal lymph node dissection.
B) CT-guided needle biopsy.
C) salvage chemotherapy.
D) serial markers and CT scans.
E) external beam radiotherapy.

**Correct Answer** **A**

**Explanation** This patient presents with a residual bulky mass after three courses of platinum based chemotherapy. While the chest X-ray and beta-hCG are normal, the serum AFP remains slightly elevated. AFP production is generally attributed to yolk sac elements in a mixed germ cell tumor. It is also seen with a number of other conditions such as hepatocellular carcinomas and benign hepatic disease, including alcohol hepatitis, as is probable in this case. While patients with persistent marker elevations after chemotherapy are generally considered very likely to harbor residual carcinoma and probably best managed by further chemotherapy, the AFP elevation seen in this case is more likely due to benign liver disease. Consequently, this patient would be best managed by retroperitoneal lymph node dissection. The most likely finding at retroperitoneal lymph node dissection would be either fibrosis or residual teratoma. CT scan directed percutaneous needle biopsy would have considerable sampling error and external beam radiotherapy has no efficacy, particularly in the management of teratoma. Further observation is generally not

**750.** A 12-year-old boy has intermittent right scrotal pain for two weeks after being kicked in the groin. Both physical examination of the scrotal contents and urinalysis during an episode of pain are normal. Doppler ultrasound of the testis demonstrates normal flow, and a 5 mm subtunical cystic lesion in the lower pole of the right testis without internal echoes or calcification. The next step is:

A) radical orchiectomy.
B) scrotal exploration and biopsy of the lower pole lesion.
C) repeat physical examination and urinalysis in three months.
D) repeat ultrasound in three months.
E) bilateral orchiopexy.

**Correct Answer** **D**

**Explanation** The questions for this peripubertal boy with intermittent testicular pain are whether he has intermittent torsion and whether the lesion in the testis requires excision. With a normal physical examination; i.e., no horizontal lie to the testis, it is difficult to diagnose intermittent torsion especially since the problem has been evident for only two weeks. The lesion in the right testis is clearly a cyst by ultrasound and treatment for this would be observation with follow-up ultrasound in three months. True simple cysts of the testis are usually non-palpable, usually subtunical near the mediastinum of the testis, and rarely change on follow-up ultrasound. Complex cysts or cysts with calcification tend to be more associated with malignancy and require more aggressive management.

**751.** Transcatheter arterial embolization is an acceptable alternative to pretransplant native nephrectomy for patients with:

A) Goodpasture syndrome.
B) severe proteinuria.
C) vesicoureteral reflux.
D) symptomatic polycystic kidneys.
E) a history of pyelonephritis.

**Correct Answer** **B**

**Explanation** Current indications for pretransplant nephrectomy may include hypertension not controlled by dialysis and medication, persistent renal infection, renal calculi, or renal obstruction. Additional indications include severe proteinuria or polycystic kidneys symptomatic from infection, severe bleeding, or massive enlargement. Of these indications for pretransplant nephrectomy, only severe proteinuria can safely and reliably be managed by pretransplant transcatheter embolization and infarction.

**752.** Two days after undergoing SWL for a 2 cm right renal pelvic stone, a 38-year-old man has fever to 38.6°C, flank pain, nausea and vomiting. An IVP shows delayed excretion into a moderately dilated right collecting system with contrast to the level of the distal ureter where an obstructing 3 cm column of fragments is present. There is a 5 mm lead fragment at the distal end of the steinstrasse. The next step is:

A) percutaneous nephrostolithotomy.
B) SWL of the lead fragment.
C) ureteroscopy and laser lithotripsy.
D) ureteral stent.
E) percutaneous nephrostomy.

**Correct Answer** **E**

**Explanation** If an obstructing stone is potentially associated with urinary infection, urgent drainage of the obstructed system is recommended. Because of potential difficulty negotiating a stent beyond the obstructing column of fragments, percutaneous nephrostomy is advisable. After adequate decompression of the obstructed collecting system and appropriate treatment of the infection or demonstration of sterile urine, definitive treatment with ureteroscopy or shock wave lithotripsy of the lead fragment is indicated. In some cases, the fragments will pass spontaneously after placement of the nephrostomy tube.

**753.** Compared with radical perineal prostatectomy, radical retropubic prostatectomy provides a wider surgical margin:

A) laterally.
B) anteriorly.
C) apically.
D) at the bladder neck.
E) at the seminal vesicles.

**Correct Answer** **B**

**Explanation** Virtually identical margins can be achieved using the perineal approach as in retropubic prostatectomy except anteriorly. Traditionally, the dorsal vein complex and associated tissues are left on the anterior aspect of the retropubic prostatectomy specimen. Conversely, in the perineal approach, the dorsal vein complex is not ligated and the plane of dissection lies between the dorsal vein complex and the anterior aspect of the prostate, the impact of this difference upon surgical tumor control is unknown.

**754.** A 56-year-old man has a well-functioning cadaveric renal transplant. He is an insulin-dependent diabetic and develops chronic symptomatic urinary retention. Bladder emptying does not improve with alpha-adrenergic blockade or TURP. The most appropriate management is:

A) sterile intermittent catheterization.
B) clean intermittent catheterization.
C) prostatic stent.
D) repeat TURP.
E) bethanechol.

**Correct Answer** **B**

**Explanation** Clean intermittent catheterization is the treatment of choice for chronic nonobstructive urinary retention. The risks and complications of this management are not significantly greater in transplant recipients than in patients with normally functioning kidneys.

**755.** Which urine sample should be collected for pH testing to establish the diagnosis of renal tubular acidosis:

A) fasting.
B) postprandial.
C) diurnal.
D) nocturnal.
E) hydrated.

**Correct Answer** **A**

**Explanation** Initial screening for renal tubular acidosis can be done by measuring the pH of the second voided morning urine specimen after the patient has fasted overnight. The second voided specimen is better than the first because the first voided specimen may have an elevated pH as a result of pre-fasting food intake.

**756.** A seven-year-old boy has encopresis, enuresis and delayed motor development. Physical examination, urinalysis, and renal sonogram are normal. A KUB shows a Scimitar sacrum. The next step is:

A) observation.
B) timed voiding and voiding diary.
C) enemas and oral laxatives.
D) spinal MRI scan.
E) cystoscopy.

**Correct Answer** **D**

**Explanation** This child has a Scimitar sacrum, a congenital defect that is almost always associated with a tethered cord. A spinal MRI scan is necessary. Timed voiding and a voiding diary can be helpful but do not supplant the need for an MRI scan. More common spinal skeletal defects such as spina bifida occulta do not require further radiographic assessment.

**757.** A 32-year-old muscular man with a BMI of 31 underwent a prolonged left transperitoneal laparoscopic donor nephrectomy in the lateral decubitus position. Two hours later, he has increasing right flank pain and swelling. There is reddish discoloration in the flank. His urine is brownish-red with 200 cc output since surgery. The next step is:

A) electrolytes and creatine kinase.
B) coagulation studies.
C) I.V. ketorolac.
D) I.V. vancomycin.
E) immediate re-exploration.

**Correct Answer** **A**

**Explanation** The body mass index (BMI) is calculated by dividing the weight in kilograms by the height in meters squared. The ideal BMI is 25 or less, greater than 30 is moderately obese, and greater than 35 is defined as morbid obesity. A BMI of greater than 35 is usually a contraindication to living renal donation. The most likely diagnosis is rhabdomyolysis due to ischemic necrosis of the flank muscles and resultant myoglobinuria. The diagnosis is confirmed by measurement of the serum creatine kinase or urinary myoglobin. The best treatment is vigorous hydration and diuresis. Alkalinization has also been described in the treatment but has not been proven to be beneficial. Some patients will develop acute renal failure and may need supportive dialysis.

**758.** The metabolic defect primarily responsible for urolithiasis in a patient with short bowel syndrome is:

A) systemic acidosis with hypocitraturia.
B) enteric hyperoxaluria.
C) hypomagnesiuria.
D) secondary hyperparathyroidism.
E) absorptive hypercalciuria.

**Correct Answer** **B**

**Explanation** The hyperoxaluria in this syndrome results from fat malabsorption which leads to saponification of enteric calcium. As such, there is not enough enteric calcium to effectively bind enteric oxalate. Accordingly, oxalate remains in a more soluble state and is absorbed in the colon. In addition, the presence of bile acids and fatty acids in the colon appears to increase the permeability of the colon to oxalate.

**759.** A 31-year-old man has several small, asymptomatic papules on the distal shaft of the penis. Biopsy of one of the lesions reveals Bowenoid papulosis. The next step is:

A) observation.
B) laser ablation.
C) topical 5-FU.
D) wide excision of lesions.
E) Mohs surgery.

**Correct Answer** **A**

**Explanation** Bowenoid papulosis differs from other types of squamous cell carcinoma in-situ by earlier onset (mean age: 28 years), multifocality, location primarily on the shaft, smaller size (2-10 mm), and papillary appearance. The clinician must be aware of this distinct entity because of its indolent behavior and spontaneous regression in many patients. These patients should be carefully observed. Radical therapy, including laser ablation, wide local incision, partial penectomy, or total penectomy, is not indicated.

**760.** Urinary incontinence following radical prostatectomy most frequently results from functional deficiency of the:

A) levator ani muscle.
B) bladder neck.
C) proximal urethral musculature.
D) rhabdosphincter.
E) bulbocavernosus muscle.

**Correct Answer** **D**

**Explanation** Deficiency of the periurethral rhabdosphincter is the basis for urinary incontinence following radical prostatectomy. The rhabdosphincter consists of type I slow twitch striated muscle fibers that contract slowly yet provide sustained tone. The bladder neck is not a major zone of sphincteric competence after radical prostatectomy, and the intrinsic smooth musculature of the proximal urethra is not a urinary continence mechanism. The levators are fast twitch type II striated muscles, designed to contract forcefully, rapidly, and for a short duration affording only voluntary interruption of the urinary stream without sustained continence.

**761.** The predominant renal histologic change noted in experimental studies after SWL is:

A) glomerulosclerosis.
B) tubular necrosis.
C) proliferative nephritis.
D) interstitial fibrosis.
E) nephrosclerosis.

**Correct Answer** **D**

**Explanation** Extracorporeal shock wave lithotripsy results in acute disruption of the diminutive arcuate veins and resultant interstitial hemorrhage within the focal area of the shock wave. As the acute injury resolves, a focus of interstitial fibrosis develops. This area of damage usually accounts for well under 1%25 of the total functional area of the kidney and as such is undetectable by commonly performed differential renal function studies. Glomerulosclerosis, proliferative nephritis, and nephrosclerosis are not associated with the injury incurred by SWL. Tubular necrosis may occur as part of the larger process of interstitial fibrosis.

**762.** A 76-year-old man has hip pain after a fall. Seven years ago, he had a bilateral orchiectomy for T3 prostate cancer. A plain film demonstrates a nonpathologic fracture. PSA is undetectable. The next step is:

A) observation.
B) bone scan.
C) bone densitometry.
D) antiandrogen.
E) local radiotherapy.

**Correct Answer** **C**

**Explanation** This man by virtue of his age and androgen deprivation therapy is at increased risk for osteoporosis. The consequence of osteoporosis is an increase in bone fragility and a susceptibility to fracture. Androgen deprivation therapy increases the risk of osteoporosis and is related to the duration of therapy. Compared to age-matched controls, men on ADT have 6.5%25 to 17.3%25 higher bone loss. Furthermore, the risk of non-pathologic fracture with ADT is 4%25 at 5 years and 20%25 at 10 years. DEXA scan is the gold standard for diagnosis of osteoporosis, and is reported as compared to young adults (T-score) and age-matched (Z-score) controls. The treatment initially includes increasing physical activity on weight bearing joints and the addition of both Vitamin D and calcium. Since this patient has no clinical evidence of disease progression, there is no indication for additional treatment.

**763.** COX-2 inhibitor administration alters ureteral function by:

A) decreasing contractility.
B) increasing sensitivity of nociceptors.
C) decreasing arachidonic acid levels.
D) reducing 15-hydroxyprostaglandin dehydrogenase activity.
E) increasing cyclooxygenase activity.

**Correct Answer** **A**

**Explanation** Cyclooxygenase type 2 (inducible-COX-2) inhibitors reduce ureteral colic by reducing production of PGH2 from arachidonic acid while allowing the continued activity of cyclooxygenase type 1 (constitutive- COX-1). This affects the ureter by decreasing ureteral contractility and the sensitivity of nociceptors.

**764.** A 65-year-old woman on warfarin for recurrent pulmonary emboli has cystitis. The drug least likely to cause enhanced anticoagulation:

A) tetracycline.
B) nitrofurantoin.
C) ciprofloxacin.
D) chloramphenicol.
E) sulfamethoxazole.

**Correct Answer** **B**

**Explanation** All of the following drugs may enhance the hypoprothrombinemic response to oral anticoagulants: allopurinol, aminoglycosides, aminosalicylic acid, chloramphenicol, cimetidine, ethacrynic acid, indomethacin, isoniazid, metronidazole, miconazole, nalidixic acid, oxyphenbutazone, phenylbutazone, propoxyphene, salicylates, sulfonamides, tetracyclines, trimethoprim-sulfa-methoxazole, and Vitamin E. The semi-synthetic beta-lactam penicillins such as carbenicillin, ticarcillin, mezlocillin, and piperacillin may produce coagulation defects at high doses, especially in the presence of renal impairment. Iodinated contrast material may also produce transient abnormalities in clotting. Broad spectrum antibiotics, particularly when administered orally, may disrupt the gut flora and alter Vitamin K synthesis. Drugs such as allopurinol and metronidazole inhibit the hepatic metabolism of oral anticoagulants. Drugs such as ethacrynic acid, nalidixic acid, and sulfonamides displace oral anticoagulants from proteins and increase the amount of circulating anticoagulant.

**765.** A 54-year-old woman undergoes an ileocecal pouch cutaneous urinary diversion two years after pelvic radiation for cervical cancer. Four months later, she has right lower quadrant pain and fecaluria. A pouchogram reveals contrast extending into the colon adjacent to the pouch. The next step is:

A) hyperalimentation.
B) bilateral nephrostomy drainage.
C) pouch endoscopy and fulguration of fistula.
D) catheter drainage and low residue diet.
E) colonoscopy.

**Correct Answer** **D**

**Explanation** Entero-conduit fistulas have been reported after ileal and right colon conduit urinary diversion. The diagnosis should be suspected in patients who present with gastrointestinal symptoms and metabolic acidosis. They are most common after pelvic irradiation. Conservative therapy is often effective with low residue diet and continuous pouch drainage. Further diagnostic evaluation with colonoscopy or pouch endoscopy is of little value, and biopsy or fulguration may enlarge the fistula. Open surgical exploration may be required if this regimen fails.

**766.** The factor most responsible for ureteral dilation during pregnancy is:

A) mechanical compression by the uterus.
B) elevated estradiol levels.
C) elevated progestin levels.
D) placental hormones.
E) increased urine flow.

**Correct Answer** **A**

**Explanation** Dilation of the ureter occurs commonly during pregnancy and is most prominent by the 22nd to 24th week. Although various experiments have suggested that estrogens, progestins, placental hormones and increased GFR may play a role in the dilation, mechanical compression is the most significant factor. Indeed, quadrupeds have a lower incidence of ureteral dilation during pregnancy than bipeds.

**767.** A six-year-old girl with recurrent symptomatic UTIs has a normal renal ultrasound. A VCUG is shown in the exhibit (It is normal). The next step is prophylactic antibiotics and:

A) timed voiding.
B) urethral meatotomy.
C) internal urethrotomy.
D) urethral dilation.
E) alpha-blockers.

**Correct Answer** **A**

**Explanation** The VCUG is normal. Formerly, a dilated urethra proximal to the meatus in a voiding cystogram in a female was thought to represent distal urethral stenosis. However, on another frame of this voiding cystogram, as is commonly seen, the urethra is of uniform caliber from the bladder neck to the urethral meatus. In addition, no correlation exists between the size of the urethral meatus, the radiographic picture, and the incidence of urinary infection in girls. Controlled studies have shown that instrumentation, whether it be by meatotomy, internal urethrotomy or urethral dilation, has no effect on the recurrence rate of urinary infections. Therefore, the correct answer is prophylactic antibacterial therapy which may be aided by a timed-voiding regimen.

**768.** A 69-year-old man has T2b Gleason 7 (4+3) prostate cancer and a prostate volume of 30 cc. PSA is 16.5 ng/ml. CT scan of the pelvis and bone scan are negative. He has elected radioactive seed implantation. The most appropriate treatment regimen is:

A) 125I implant alone.
B) 103P implant alone.
C) leuprolide and seed implant.
D) seed implant and external beam radiation.
E) leuprolide, seed implant and external beam radiation.

**Correct Answer** **E**

**Explanation** The protocol for radiation implant therapy will depend on the particular parameters for each patient to include clinical stage, serum PSA level, and Gleason score. A patient with a stage T2b Gleason 7 (4+3) and PSA greater than 15 would be considered a high risk patient. He would therefore be treated with hormone ablation, an implant and external beam radiation therapy.

**769.** The majority of ejaculatory fluid originates in the:

A) prostate.
B) ejaculatory ducts.
C) seminal vesicles.
D) Cowper's glands.
E) testes.

**Correct Answer** **C**

**Explanation** The human ejaculate contains spermatozoa and seminal plasma. The latter encompasses secretions from the prostate, seminal vesicles, Cowper's glands and the glands of Littre. The majority of this fluid (approximately 3 ml) originates in the seminal vesicles.

**770.** A 72-year-old woman has had six urinary tract infections over the past year. These infections return shortly after antibiotic courses are concluded, and cultures have demonstrated significant colony counts of E. coli. Renal sonogram is normal. The next step is:

A) ciprofloxacin prophylaxis.
B) nitrofurantoin prophylaxis.
C) oral low dose estrogen.
D) intravaginal estrogen.
E) lactobacillus.

**Correct Answer** **D**

**Explanation** The efficacy of estrogen for the prevention of urinary tract infections in post-menopausal women has been demonstrated in several studies. There appears to be a higher effectiveness rate in topically applied estrogen in the vagina with an improvement in lactobacillus concentrations, decreased vaginal pH and a decrease in urinary tract infection episodes from 5.9 to 0.5 episodes per year. Antimicrobial prophylaxis should be used at low dose, if used, and cranberry juice, while studied extensively, does not seem to decrease the frequency of urinary tract infections as effectively as topical estrogen. Lactobacillus probiotics, while effective in an investigational setting, have not been subject to the scrutiny of controlled trials.

**771.** The most substantial risk of mitoxantrone therapy for prostate cancer is:

A) cardiotoxicity.
B) myelosuppression.
C) pulmonary toxicity.
D) hepatotoxicity.
E) renal toxicity.

**Correct Answer** **A**

**Explanation** The most devastating complication of mitoxantrone therapy is cardiotoxicity, which can lead to a cardiomyopathy that can be debilitating. Patients with symptoms should be screened with a MUGA scan to confirm good LV function prior to initiating therapy, and they should be monitored carefully during and after therapy. An echocardiogram should be obtained if new symptoms develop. With careful patient selection, this complication should only be observed in 2-5%25 of patients.

**772.** In a chronically obstructed ureter, impaired urine transport is primarily due to decreased:

A) ureteral wall tension.
B) intraluminal resting pressure.
C) intraluminal contractile pressure.
D) pacemaker coupling.
E) ureteral dimension.

**Correct Answer** **C**

**Explanation** Several effects are observed with ureteral obstruction. At onset, there is an increase in baseline (resting) ureteral intraluminal pressure. An initial increase in intraluminal contractile pressure causes the increase in ureteral dimensions. A transient increase occurs in the amplitude and frequency of the peristaltic contraction waves. Over time, the relative difference in contractile pressures over resting pressures diminishes. Contractile frequency decreases over time but amplitude is preserved. Obstruction also alters pacemaker coupling causing discoordination of peristaltic activity.

**773.** The treatment of idiopathic oligospermia with human chorionic gonadotropin is most likely to result in:

A) elevation of serum testosterone.
B) increased sperm concentration.
C) improved sperm motility.
D) increased pregnancy rate.
E) increased seminal volume.

**Correct Answer** **A**

**Explanation** Treatment of oligospermic patients with human chorionic gonadotropin does not generally achieve consistent improvement in sperm concentration, sperm motility, or pregnancy rate. Estradiol and testosterone levels do rise, however.

**774.** The best predictor of long-term disease-free survival after salvage prostatectomy is:

A) Gleason score < 8.
B) serum PSA nadir < 0.5 ng/ml.
C) non-palpable tumor.
D) serum PSA velocity < 2.0 ng/ml/year.
E) serum PSA < 10 ng/ml.

**Correct Answer** **E**

**Explanation** The best predictor of outcome after salvage prostatectomy is serum PSA level of < 10 ng/ml. Patients with PSA of < 10 ng/ml are much more likely to have favorable pathological findings and to maintain biochemical disease free status on long-term surveillance. In contrast, clinical stage and tumor grade were not as reliable predictors of outcome in the salvage setting. PSA nadir of < 0.5 ng/ml is an excellent predictor of outcomes after definitive radiation therapy but has no predictive value for patients that have failed RT and are considering salvage prostatectomy.

**775.** Epsilon-aminocaproic acid is useful in treating post-prostatectomy hemorrhage by:

A) increasing production of fibrin from fibrinogen.
B) increasing production of plasmin from plasminogen.
C) decreasing activation of plasminogen by urokinase.
D) decreasing production of fibrinogen.
E) decreasing production of urokinase.

**Correct Answer** **C**

**Explanation** The mechanism of epsilon-aminocaproic acid (Amicar) is to establish a clot that is resistant to the urokinase effect on plasminogen; which produces plasmin, a proteolytic enzyme with a high specificity for fibrin.

**776.** A 36-year-old infertile man had a right inguinal herniorrhaphy at age four years and a left varicocelectomy three years ago. His testicular volume is 30 ml on the right and 16 ml on the left without evidence of a varicocele. Semen analysis reveals normal ejaculate volume, 3 million sperm/ml, and 20% motility. Serum FSH is normal and antisperm antibody testing is positive. The next step is:

A) bilateral testicular biopsy.
B) scrotal color Doppler ultrasonography.
C) scrotal exploration and vasography.
D) transrectal ultrasonography.
E) venography.

**Correct Answer** **C**

**Explanation** The patient has severe oligospermia with unilateral testicular atrophy and a normal serum FSH. This constellation of clinical findings and a history of prior inguinal surgery on the side of a normal sized testis suggests the possibility of unilateral vasal obstruction. The few sperm seen on semen analysis may be coming from the unobstructed atrophic left testis. The finding of active spermatogenesis upon testicular biopsy is not diagnostic for obstruction in oligospermic patients as is the case in azoospermia. Scrotal exploration and vasography is the only method that will accurately establish the diagnosis of obstruction.

**777.** A 68-year-old woman has nocturia x3, persistent suprapubic pain, urgency and daytime frequency after her third BCG instillation for recurrent Stage Ta bladder cancer. A urinalysis reveals 5-10 RBC and 10-20 WBC/hpf. A urine culture is negative. The next step is:

A) space remaining treatments two weeks apart.
B) ciprofloxacin.
C) decrease weekly intravesical dose of BCG by 50 percent.
D) oral isoniazid therapy with BCG treatments.
E) oral oxybutynin.

**Correct Answer** **E**

**Explanation** BCG cystitis is a common side effect of BCG therapy. A possible bacterial infection should also always be considered. Quinolone antibiotics are not indicated with a negative urine culture and actually may have some negative effect on the BCG. Similarly, antitubercular medications would abrogate the effectiveness of BCG and add the risk of hepatotoxicity. A decrease in dose intensity may hamper therapeutic efficacy. The patient's symptoms are mild to moderate and are best treated with an anti-spasmodic agent during the course of therapy.

**778.** A 12-year-old boy sustains a flexion-extension injury to the spine and has gross hematuria following a motor vehicle accident. A CT scan is shown in the exhibit (It shows extravasation of contrast medial to the kidney without perinephric hematoma or fracture). There is no contrast seen in the distal ureter. The next step is:

A) observation.
B) flank exploration and nephrectomy.
C) placement of percutaneous nephrostomy.
D) retrograde pyelogram and repair of injury.
E) exploration and right to left transureteroureterostomy.

**Correct Answer** **D**

**Explanation** This exhibit demonstrates extravasation of contrast medial to the kidney. When this finding is noted on CT scan without perinephric hematoma or fracture, one has to suspect UPJ disruption particularly in a child. This injury should be treated promptly. If observation is elected, then it most likely will heal with stricture and subsequent obstruction. The best approach for management of this patient is to perform retrograde pyelography to confirm the injury. This should then be followed by exploration and reconstruction of the injury.

**779.** A 30-year-old man underwent a unilateral orchiectomy and received two cycles of cisplatin based chemotherapy for a high risk Stage I nonseminomatous germ cell tumor. Two years after treatment, he is likely to have:

A) decreased fertility and erectile function.
B) no change in fertility and decreased erectile function.
C) decreased fertility and ejaculatory dysfunction.
D) decreased fertility and no change in erectile function.
E) no change in fertility or erectile function.

**Correct Answer** **E**

**Explanation** There is a 98%25 cure rate for patients with clinical stage I nonseminomatous germ cell tumors. Concern regarding post surgical and post chemotherapy fertility and sexual activity status is high in this relatively young cohort of patients. Two cycles of cisplatin based chemotherapy after orchiectomy has no adverse impact on fertility status and sexual activity when compared to their pre surgical and pre chemotherapy status.

**780.** A 65-year-old patient receives two consecutive six-week courses of intravesical BCG for a Grade III T-1 transitional cell carcinoma of the bladder. One year after his last BCG dose, cystoscopy and biopsy demonstrate recurrent high Grade T1 disease. The next step is:

A) radical cystoprostatectomy.
B) repeat transurethral resection.
C) intravesical mitomycin C.
D) intravesical alpha interferon.
E) six weeks of BCG followed by maintenance therapy.

**Correct Answer** **A**

**Explanation** Failure with high grade superficial disease after two-six week courses of BCG is a poor prognostic indicator. These patients are at high risk for disease progression and death. Patients failing BCG in the first two years appear to be at a particular risk. Repeat TUR is unnecessary as this man should undergo cystectomy whether or not he has invasive disease. Interferon alone has minimal efficacy in this high-risk patient.

**781.** The nephrotoxic effect of cisplatin is due to:

A) efferent arteriolar constriction.
B) afferent arteriolar constriction.
C) pre-existing plasma volume contraction.
D) a direct toxic effect on renal tubular cells.
E) renal tubular obstruction from drug precipitation .

**Correct Answer** **D**

**Explanation** Cisplatin nephrotoxicity is due to a direct toxic effect of the drug on renal tubular cells. Azotemia and dehydration are predisposing conditions which increase the risk of this complication. Cisplatin is not precipitated in the renal tubules nor does it affect glomerular hemodynamics.

**782.** A 27-year-old couple has not conceived after one year of appropriately timed intercourse. The man has a sperm count of 30 million with 60% motility and 20% strict normal morphology. The women has normal ovulation and menstruation. She has no history of pelvic infections or abdominal surgery. The chance of spontaneously conceiving in the next year is:

A) 5%.
B) 10%.
C) 25%.
D) 50%.
E) 80%.

**Correct Answer** **D**

**Explanation** 90% of couples conceive in the first year of trying. After two years it is 95%. One half of couples not conceiving in the first year will conceive in the second. These rates are affected by age and other factors but are appropriate to this couple.

**783.** A 68-year-old man receives two six-week courses of intravesical BCG for recurring superficial bladder tumors. He is asymptomatic, but a new firm area in the prostate gland is noted on digital rectal examination. The serum PSA is 3.1 ng/ml. A transrectal ultrasound-guided biopsy of the prostatic lesion reveals a caseating granuloma. The most appropriate management is:

A) observation.
B) isoniazid for six months.
C) cycloserine for six weeks.
D) isoniazid and rifampin for three months.
E) isoniazid, rifampin, and cycloserine for six months.

**Correct Answer** **A**

**Explanation** This asymptomatic patient has developed granulomatous prostatitis. This is a common condition following intravesical BCG therapy that requires no further intervention. The other more common side effect associated with intravesical BCG therapy is bladder irritability. This symptom complex includes dysuria (91%), urinary frequency (90%), hematuria (46%), fever (24%), malaise (18%), nausea (8%), chills (8%), arthralgia (2%), and pruritus (1%).

**784.** Six months following implantation of an artificial sphincter, a 22-year-old myelodysplastic man has bilateral ureteral dilation by ultrasound. The diagnostic study most likely to reveal the cause of the problem is:

A) CMG.
B) diuretic renogram.
C) antegrade pressure/perfusion study.
D) repeat ultrasound after catheter drainage.
E) IVP.

**Correct Answer** **A**

**Explanation** Bladder pressure adversely influences ureteral function. In this case, bladder pressure owing to the artificial sphincter is likely to have increased since this phenomenon has been reported in many similar patients. A CMG should be done first to exclude this before upper tract studies are repeated.

**785.** Necrotizing fasciitis of the external genitalia in men is most frequently associated with invasive infections of the:

A) epididymis.
B) urethra.
C) prostate.
D) preputial skin.
E) testis.

**Correct Answer** **B**

**Explanation** Necrotizing soft tissue infections of the genitalia are most often due to perirectal infections, urethral stricture disease and skin trauma. Numerous causative organisms may be identified, including aerobic and anaerobic gram positive cocci, gram negative bacteria and other anaerobes. Patients with diabetes, alcoholism, obesity and immunosuppression are at increased risk of such infections. Aggressive treatment including the use of broad-spectrum antibiotics, early debridement, and meticulous wound care are essential in order to limit morbidity and mortality.

**786.** A 75-year-old man undergoes a TURP for obstructive voiding symptoms. He was treated three years ago with intravesical BCG therapy for a superficial transitional cell carcinoma of the bladder, and has not had any tumor recurrence. The TUR specimen reveals benign prostatic hyperplasia and transitional cell carcinoma in situ of the prostatic urethra. There is no evidence of ductal or stromal invasion. The most appropriate management is:

A) repeat BCG therapy.
B) mitomycin C therapy.
C) repeat TURP.
D) cystoscopy and cytology in three months.
E) radical cystoprostatectomy and urethrectomy.

**Correct Answer** **A**

**Explanation** Tumor recurrence in the prostatic urethra is common following intravesical BCG therapy for superficial transitional cell carcinoma of the bladder. If the recurrence is confined to the prostatic urethral mucosa, it may be completely eradicated by the TURP. However, radical cystoprostatectomy is necessary if the tumor recurrence involves prostatic stroma, or glands. Urethrectomy or very careful follow-up, also is indicated in the latter circumstance.

**787.** An intoxicated 45-year-old man is evaluated in the emergency room for abdominal pain. Physical examination reveals no abnormalities other than ecchymoses over the lower abdomen. The blood pressure is 160/80 mm Hg, pulse 70, respirations 20, temperature 37.5 degrees Celsius. A plain film of the abdomen shows a "ground glass" appearance. Initial blood studies reveal: HCT 32%, WBC 15,800, Na 122 mEq/l, K 6.0 mEq/l, Cl 109 mEq/l, CO2 13 mEq/l, BUN 80 mg/dl, and creatinine 4.3 mg/dl. A Foley catheter is placed but there is no urinary output. The next step is:

A) Kayexalate and furosemide.

B) cystogram.

C) renogram.

D) non-contrast CT scan.

E) paracentesis.

**Correct Answer** **B**

**Explanation** Hyperkalemic, hyperchloremic metabolic acidosis is consistent with peritoneal absorption of urine. The ground glass appearance also suggests urinary extravasation. A ruptured bladder with intraperitoneal or retroperitoneal extravasation of urine may produce minimal symptoms. The combination of hyperkalemic, hyperchloremic metabolic acidosis, elevated BUN and creatinine, anuria, and evidence of abdominal trauma should clearly suggest urinary extravasation. A cystogram or CT cystogram are the best tests to diagnose intraperitoneal bladder rupture. A renogram, noncontrast CT scan, or pelvic tap are not indicated in this scenario. While the Kayexalate is useful in reducing the patient's serum potassium, the administration of Lasix inducing further extravasation of urine into the abdominal cavity may further compound the problem.

**788.** The efficacy of amphotericin B bladder irrigations for localized Candidal infection is reduced by:

A) an alkaline urine.
B) concomitant use of sulfonamide therapy.
C) an acid urine.
D) use of non-siliconized catheters for drainage.
E) presence of bacterial infection in the urine.

**Correct Answer** **C**

**Explanation** The ideal pH for growth of Candida fungi ranges from 5.1 to 6.4. Alkalinization of the urine may help resolve candiduria.

**789.** A seven-year-old girl has a UTI. A longitudinal renal ultrasound is shown in the exhibit. The diagnosis is:

A) ureteropelvic junction obstruction.
B) duplication with upper pole hydronephrosis.
C) multicystic renal dysplasia.
D) acute lobar nephronia.
E) polycystic renal disease.

**Correct Answer** **B**

**Explanation** The longitudinal renal ultrasound shown in the exhibit demonstrates a normal echo pattern in the lower portion of the kidney. The fluid-filled, echo-free mass in the upper pole is consistent with hydronephrosis of an upper pole duplicated collecting system.

**790.** A 58-year-old man has incontinence and prolonged urination six months following radical retropubic prostatectomy. Urodynamic evaluation with a 10 Fr catheter demonstrates normal bladder capacity and no detrusor instability. At 250 ml, Valsalva maneuver increases bladder pressure to 150 cm $H_2O$ without evidence of urinary leakage. The etiology of the incontinence is best determined by:

A) remove catheter and repeat Valsalva maneuver.
B) repeat urodynamic study with suprapubic catheter.
C) uroflowmetry.
D) retrograde urethrogram.
E) cystoscopy.

**Correct Answer** **A**

**Explanation** The patient most likely has an anastomotic stricture and stress incontinence. The 10 Fr catheter is occluding the bladder neck, preventing demonstration of stress incontinence. A repeat urodynamic study with a suprapubic catheter is not necessary since the bladder capacity is known to be normal and there is no evidence of instability. A cystoscopy and retrograde urethrogram would demonstrate the stricture, however these studies would not demonstrate stress incontinence. The simplest study to determine the etiology of the incontinence is removing the urodynamic catheter with the bladder full and asking the patient to Valsalva in order to evaluate sphincteric function.

**791.** A 55-year-old woman has two episodes of gross hematuria. Multiple urine cultures are sterile. On cystoscopic examination, a nodular lesion is identified at the bladder outlet and is biopsied. Histologic evaluation reveals a granulomatous lesion with laminated concretions within the cytoplasm of macrophages. The best treatment for the condition is:

A) bethanechol chloride.
B) antibiotic therapy.
C) radiation therapy.
D) partial cystectomy.
E) tamsulosin.

**Correct Answer** **A**

**Explanation** The endoscopic and histologic appearance of the lesion is most consistent with malakoplakia. The described Michaelis-Guttman bodies are diagnostic for malakoplakia. This granulomatous process is thought to result from macrophage dysfunction due possibly to abnormally low intracellular concentrations of cyclic guanine monophosphate. Bethanechol chloride increases intracellular levels of cyclic guanine monophosphate and has proved beneficial in the treatment of malakoplakia. Many patients with malakoplakia have infected urine or histories of UTI. In this case, however, the malakoplakia did not appear to result from UTI, and antimicrobial therapy is not appropriate. The other treatments have no role in the management of malakoplakia.

**792.** A 38-year-old woman undergoes amniocentesis at 24 weeks gestation. The fetal karyotype is 45 X/46 XY. The gonads will most likely be:

A) bilateral streak gonads.
B) streak gonad and testis.
C) streak gonad and ovary.
D) streak gonad and dysgenetic testis.
E) bilateral testes.

**Correct Answer** **E**

**Explanation** With the widespread use of amniocentesis it has become apparent that over 90%25 of individuals born with 45,X/46,XY karyotypes have normal male genitalia. The infrequent presentation of these patients at a later date with either gonadal dysfunction or malignancy implies a normal hypothalamic-pituitary axis, and a low risk of malignancy.

**793.** A 55-year-old multiparous woman has urge incontinence. Urinalysis is normal and physical examination demonstrates a Grade 3 cystocele. Urodynamics reveal a postvoid residual of 100 ml, involuntary bladder contractions with incontinence, and a detrusor pressure at maximum flow (8 ml/sec) of 50 cm $H_2O$. When the cystocele is reduced, no stress urinary incontinence can be elicited. The next step is:

A) oxybutynin.
B) doxazosin.
C) pubovaginal sling.
D) anterior colporrhaphy.
E) pubovaginal sling and anterior colporrhaphy.

**Correct Answer** **D**

**Explanation** This patient suffers from bladder outlet obstruction secondary to a large cystocele as indicated by a high voiding pressure and low flow rate. The obstruction secondarily causes detrusor instability and subsequent urgency incontinence. Despite reducing the cystocele, no stress incontinence can be elicited indicating good support of the urethrovesical junction. The best treatment is to repair the cystocele with a technique such as anterior colporrhaphy. The absence of stress urinary incontinence precludes the need for a pubovaginal sling and if performed alone is likely to exacerbate the obstruction. Treatment with oxybutynin in a patient with obstruction is likely to increase the postvoid residual. Although doxazosin can be used for female bladder outlet obstruction, when possible, the best treatment is to correct the underlying abnormality.

**794.** In women with uncomplicated cystitis, the greatest increase in E. coli resistance over the last decade has occurred with:

A) ampicillin.
B) nitrofurantoin.
C) cefazolin.
D) trimethoprim-sulfamethoxazole.
E) ciprofloxacin.

**Correct Answer** **D**

**Explanation** A number of studies have demonstrated an increase in E. coli uropathogen resistance to trimethoprim-sulfamethoxazole both in community and hospital populations in the past five to seven years. While ampicillin has the highest level of resistance, the greatest increase in resistance has occurred with trimethoprim/sulfamethoxazole (increasing from 9%25 to 18%25 resistance from 1993-1998).

**795.** A 52-year-old man has lethargy and weakness. His serum laboratory values are: sodium 115 mEq/l, potassium 4.5 mEq/l, chloride 80 mEq/l, CO2 23 mEq/l, BUN 8 mg/dl, creatinine 0.8 mg/dl, uric acid 2.9 mg/dl. The most likely diagnosis is:

A) Addison's disease.
B) congestive heart failure.
C) cirrhosis with ascites.
D) inappropriate antidiuretic hormone secretion.
E) chronic diarrhea.

**Correct Answer** **D**

**Explanation** All of the listed conditions can cause hyponatremia but the syndrome of inappropriate antidiuretic hormone secretion (SIADH) is the only one associated with hypouricemia and a normal serum BUN and creatinine. SIADH is due to sustained endogenous over-production of ADH. Patients with SIADH reach a steady state in which body water is expanded by water retention but in which natriuresis prevents edema. Relative volume expansion results in an increased glomerular filtration rate, tubular sodium wasting and reduced net tubular absorption of creatinine and uric acid. Volume contracted states such as Addison's disease and chronic diarrhea are associated with hyperuricemia and pre-renal azotemia. In congestive heart failure and cirrhosis, serum uric acid is in the high normal range and the BUN and creatinine are often elevated.

**796.** A 47-year-old African-American woman has left flank pain and hematuria. Urine culture and cytology are negative. An IVP reveals a single area of calyceal cavitation on the left, and during cystoscopy blood is seen from that orifice. Hemoglobin electrophoresis is consistent with sickle cell trait. The next step is:

A) hypertransfusion.
B) epsilon aminocaproic acid.
C) rest, hydration, and alkalinization.
D) ureteroscopy and fulguration.
E) angiography and selective embolization.

**Correct Answer** **C**

**Explanation** Sickle cell hemoglobinopathy accounts for one-third of cases of gross hematuria in African Americans. While hematuria occurs more regularly in patients with sickle cell disease, the problem occurs more frequently in patients with sickle cell trait because of the much higher frequency of this disorder. Although the mechanism of hematuria is not clear, presumably it results from sickling and sludging of blood in the medulla and papillae, leading to localized ischemia and papillary necrosis. Treatment of the hematuria begins with rest and hydration. Techniques reported of value include intravenous hydration, sodium bicarbonate, mannitol, and loop diuretics. Epsilon aminocaproic acid may also be of benefit though this agent should be reserved for intractable bleeding because of the risk of intrapelvic or ureteric clotting. Life-threatening hematuria can occur and should be managed with arteriography with selective arterial embolization. In rare cases, refractory patients may require endoscopic localization followed by partial or total nephrectomy.

**797.** A 42-year-old man is being treated with six months of INH for BCG sepsis. To prevent neuropathy, he should be given:

A) ascorbic acid.
B) pyridoxine.
C) nicotinic acid.
D) Vitamin B12.
E) folic acid.

**Correct Answer** **B**

**Explanation** Because INH treatment is associated with neuropathy from pyridoxine deficiency, all patients should be supplemented with 25-50 mg of pyridoxine (Vitamin B6) daily.

**798.** A 57-year-old woman is evaluated for polyuria with daily urine output of 4-8 liters. The history and physical examination are unremarkable, and urinalysis is normal. Serum glucose is 100 mg/dl, and serum creatinine is 0.9 mg/dl. Urine osmolality is 100 mOsm/l, and plasma osmolality is 270 mOsm/l. After 12 hours of dehydration, the urine osmolality is 700 mOsm/l. After vasopressin (ADH) is administered, urine osmolality increases to 1000 mOsm/l. The most likely diagnosis is:

A) inappropriate ADH secretion.
B) partial ADH deficiency.
C) Bartter syndrome.
D) psychogenic polydipsia.
E) nephrogenic diabetes insipidus.

**Correct Answer** **D**

**Explanation** Dehydration and vasopressin result in appropriate physiologic responses. Therefore, the kidney is normal and the dilute urine is a physiologic response to abnormal intake. Some patients with psychogenic polydipsia have an abnormal response to dehydration and ADH because they may sneak fluids or have no osmotic gradient in the renal medulla. Thus, the diagnosis can be difficult.

**799.** Stage III prolapse in the Pelvic Organ Prolapse Quantitative (POPQ) system is when:

A) the most distal portion of the prolapse is 1 cm or less proximal or distal to the hymenal plane.
B) the most distal portion of the prolapse is 1 cm or less proximal or distal to the introitus.
C) the most distal portion of the prolapse protrudes more than 1 cm below the hymen but the entire vagina is not prolapsed.
D) the most distal portion of the prolapse protrudes more than 1 cm below the introitus but the entire vagina is not prolapsed.
E) there is complete vaginal eversion.

**Correct Answer** **C**

**Explanation** The Pelvic Organ Prolapse Quantitative (POPQ) system assigns negative numbers to structures that have not prolapsed beyond the hymen and positive numbers to structures that protrude, with the plane of the hymen defined as zero. The hymen was selected as the reference point rather than the introitus because it is more precisely identified. Stage III corresponds to prolapse beyond the hymen without complete vaginal eversion.

**800.** The fluoroquinolone most likely to alter blood glucose levels in an elderly diabetic is:

A) ciprofloxacin.
B) levofloxacin.
C) norfloxacin.
D) gatifloxacin.
E) ofloxacin.

**Correct Answer** **D**

**Explanation** Gatifloxacin and levofloxacin both exhibit a broad antibacterial spectrum of activity against gram-positive and gram-negative organisms as well as atypical organisms such as chlamydia and mycoplasma. However, gatifloxacin can prolong the QT interval and should not be used in patients on anti-arrhythmic drugs. Furthermore, gatifloxacin can cause life-threatening episodes of either hypoglycemia or hyperglycemia, especially in elderly diabetics.

**801.** The site of origin associated with the worst prognosis in rhabdomyosarcoma is:

A) uterus.
B) prostate.
C) vagina.
D) spermatic cord.
E) bladder.

**Correct Answer** **B**

**Explanation** Combination chemotherapy with or without extirpative surgery has improved the prognosis for patients with rhabdomyosarcoma. The prostate has the worst prognosis as pertains to organ of origin, and radical surgery may be required if there is lack of response to non-operative treatment.

**802.** A 45-year-old woman has urge incontinence one year following a sling procedure. Residual urine is 180 ml. Voiding pressure is 64 cm H2O. No stress incontinence is demonstrable on a videourodynamic study. Treatment should be:

A) alpha-blockers.
B) anticholinergics.
C) clean intermittent catheterization.
D) imipramine and timed voiding.
E) urethrolysis.

**Correct Answer** **E**

**Explanation** The patient has 180 ml residual urine, a very high voiding pressure, and detrusor instability. All of these are evidence of outflow obstruction. Anticholinergic agents, tricyclic antidepressants, and clean intermittent catheterization will not relieve obstruction which should be treated by urethrolysis. Following this procedure, maintenance of continence is the rule.

**803.** A 71-year-old man has urinary frequency and dysuria. WBC is 14,000 and his temperature is 39.2 degrees Celsius. Bladder ultrasound shows no residual urine. Dipstick urinalysis is nitrite and leukocyte-esterase positive. Appropriate initial antibiotic treatment is:

A) fosfomycin (Monurol).
B) trimethoprim-sulfamethoxazole.
C) ampicillin.
D) nitrofurantoin.
E) levofloxacin.

**Correct Answer** **E**

**Explanation** Fluoroquinolones are the first-line drugs for the treatment of UTIs in the elderly, especially men. Their broad spectrum of coverage and penetration into the prostate make them the preferred drugs. TMP-SMX can be considered first-line treatment in women, especially if the urinary pathogen is known to be TMP-SMX sensitive. Duration of therapy needs to be longer in the elderly, usually 10 days for women and 14-28 days for men.

**804.** Pathologic, as opposed to physiologic, post-obstructive diuresis results from:

A) impaired concentrating ability.
B) increased urea and sodium excretion.
C) increased free water clearance.
D) decreased prostaglandin excretion.
E) decreased angiotensin II secretion.

**Correct Answer** **A**

**Explanation** Physiologic post-obstructive diuresis is caused by retained urea, sodium and water. Pathologic post-obstructive diuresis is caused by impairment of concentrating ability or sodium reabsorption.

**805.** A 48-year-old woman with stress urinary incontinence after a hysterectomy undergoes a Burch urethral suspension. Preoperatively, the physical examination was normal except for urethral hypermobility. Postoperatively, she is continent but has a vaginal mass and pelvic pressure. The most likely diagnosis is:

A) cystocele.
B) enterocele.
C) rectocele.
D) vaginal vault prolapse.
E) urethral diverticulum.

**Correct Answer** **B**

**Explanation** A cystocele or rectocele would have been readily apparent on preoperative pelvic examination. Enterocele is harder to evaluate on examination and can develop de novo in up to 15%25 of patients undergoing retropubic bladder neck suspension where the bladder neck is pulled anteriorly. Retropubic suspension procedures generally do not affect the apex of the vault. The patient does not have symptoms of a urethral diverticulum, and the Burch suspension does not predispose to its development.

**806.** A 68-year-old diabetic woman is hospitalized for renal insufficiency. Three days after a catheter is placed, the patient has fever and right flank pain. Urinalysis demonstrates pyuria and fungal elements. CT scan shows no obstruction or perinephric fluid collections. The next step is:

A) observation.
B) amphotericin B bladder irrigation.
C) I.V. fluconazole for ten days.
D) I.V. amphotericin B for four days.
E) I.V. flucytosine for five days.

**Correct Answer** **C**

**Explanation** Ascending candidal pyelonephritis is most often caused by candida albicans and usually occurs in hospitalized diabetic patients with renal insufficiency with or without obstructive uropathy. It may be complicated by the presence of a ureteral stent or Foley catheter. Because this is generally an upper tract parenchymal infection, amphotericin B bladder irrigation has no role in treatment. Systemic antifungal therapy with adequate upper tract drainage is essential. Systemic antifungal therapy should be continued for a minimum of 7 to 14 days with amphotericin B or fluconazole, the drugs of choice. Amphotericin B doses are not reduced in the presence of renal failure in order to adequately treat the candidal infection. Renal toxicity may be observed. Because fluconazole is less nephrotoxic and has a more favorable toxic therapeutic pattern, it is the drug of choice in upper tract ascending candidal pyelonephritis.

**807.** A 55-year-old man with a history of gout passes multiple calcium oxalate calculi. Urine pH consistently measures 5.3 to 5.5. An IVP is normal except for the presence of two small radiopaque, non-obstructing renal calculi. The next step is:

A) sodium cellulose phosphate.
B) hydrochlorothiazide.
C) allopurinol.
D) potassium citrate.
E) trichlormethiazide.

**Correct Answer** **D**

**Explanation** Gouty diathesis is characterized by a low urine pH, increased tubular re-absorption of urate, hyperuricemia and hypertriglyceridemia. Clinical manifestations include arthritis and renal calculi. Gout may be associated with both uric acid as well as calcium stones. Those patients who form calcium stones are less likely to have gouty arthritis and hyperuricemia. The invariant feature of those with gouty diathesis who form either uric acid or calcium stones is a urine pH consistently less than 5.5. The treatment is the same whether the stones are composed of uric acid or calcium: pH manipulation in the form of potassium citrate. Potassium citrate increases the urine pH and reduces the concentration of undissociated urate, reducing the possibility of uric acid crystallization. In addition, the urinary citrate will increase and also provide increased inhibitor activity against calcium stone formation.

**808.** A 76-year-old man with chronic atrial fibrillation undergoes abdominal arteriography for evaluation of renovascular hypertension and peripheral vascular disease. One day later he has severe hypertension, an increase in serum creatinine from 1.5 to 3.8 mg/dl, and punctate infarcts in his fingers and toes. The most likely cause is:

A) emboli from atrial thrombus.
B) cholesterol embolization.
C) renal artery dissection.
D) disseminated intravascular coagulation.
E) aortic dissection.

**Correct Answer** **B**

**Explanation** Cholesterol embolization of the kidneys usually affects elderly men with atherosclerotic vascular disease, and can occur spontaneously or, more commonly, following angiographic manipulation of a diseased aorta. Renal insufficiency and hypertension result from the ensuing renal ischemia. More than 40%25 of patients have digital infarcts. Extrarenal manifestations may involve the CNS (stroke) and gastrointestinal tracts (bleeding, infarcts, perforation). The diagnosis may be confirmed by the observation of intravascular cholesterol emboli on renal, skin, or muscle biopsy. Treatment is generally supportive. Emboli from an atrial thrombus are unlikely after intraarterial catheterization. Renal artery dissection may cause renal insufficiency and hypertension, but would not be associated with digital infarcts, and would likely have presented with acute hemorrhage. DIC and false abdominal aneurysm are unlikely to present in this manner.

**809.** The antibiotic excreted predominantly in the gastrointestinal tract is:

A) doxycycline.
B) erythromycin.
C) minocycline.
D) ciprofloxacin.
E) levofloxacin.

**Correct Answer** **A**

**Explanation** Most antimicrobial drugs used in urologic practice are excreted by the kidneys either by glomerular filtration (quinolones, most tetracyclines, sulfonamides, aminoglycosides), tubular secretion (many beta-lactans) or both. Erythromycin, rifampin, clindamycin are excreted mainly by the hepato-biliary system and doxycycline in the alimentary tract. In patients with renal insuffiency, the tetracyclines except doxycycline, sulfonamides and nitrofurantoin are contraindicated whereas dose modifications are required for TMP-SMX, the quinolones, and aminoglycosides.

**810.** A patient who has been tolerating total parenteral nutrition for two weeks suddenly develops severe glucosuria. The most likely cause is:

A) early development of sepsis.
B) administration of excess glucose.
C) reduction of energy needs in a stressed patient.
D) development of insulin antibodies.
E) pancreatic failure.

**Correct Answer** **A**

**Explanation** The most common cause of hyperglycemia and glucosuria in patients receiving hyperalimentation is an excess rate of glucose infusion. In a patient who is tolerating a given rate of glucose infusion and abruptly develops glucosuria, sepsis may be present. Moreover, other clinical parameters of infection may not appear for several hours.

**811.** The finding most suggestive of renal artery stenosis on duplex ultrasonography is:

A) decreased diastolic flow.
B) turbulent systolic flow.
C) increased peak systolic velocity.
D) renal aortic ratio < 3.5.
E) resistive index < 0.8.

**Correct Answer** **C**

**Explanation** Duplex ultrasound of the renal arteries is a useful noninvasive anatomic study for the diagnosis of renal artery stenosis (RAS). Although an altered flow pattern distal to the stenosis, including decreased diastolic flow and a turbulent systolic jet, can be suggestive of RAS, the most important single indicator is a peak systolic velocity (PSV) > 180 cm/sec. The renal aortic ratio (RAR) is the ratio of renal PSV to the aortic PSV. A RAR > 3.5 indicates > 60%25 stenosis. The renal resistive index does not directly assess renal artery flow.

**812.** A 70-year-old hypogonadal man is taking therapeutic doses of dehydroepiandrosterone (DHEA) for androgen replacement. This treatment will result in:

A) decreased testosterone levels.
B) decreased estradiol levels.
C) decreased PSA levels.
D) increased dihydrotestosterone levels.
E) decreased pregnenolone levels.

**Correct Answer** **D**

**Explanation** DHEA has been used as an over-the-counter drug to increase adrenal production of androgens. In normogonadal men, little effect on hormonal parameters or PSA is seen. For men who are hypogonadal, an increase in testosterone and its metabolites (DHT, estradiol) is expected. Pregnenolone, the immediate precursor to testosterone production within the testis, is likely to decrease or remain unaffected by exogenous DHEA. PSA levels increase in hypogonadal men who receive exogenous androgens.

**813.** The major site of action of aldosterone in the kidney is the:

A) proximal tubule.
B) juxtaglomerular apparatus.
C) ascending portion of Henle's loop.
D) collecting duct.
E) distal tubule.

**Correct Answer** **E**

**Explanation** Aldosterone is a mineralocorticoid produced in the adrenal cortex. Its main site of action is in the distal tubule. Aldosterone acts on the distal renal tubule to promote the absorption of sodium and the excretion of potassium. Renin promotes the conversion of angiotensinogen to angiotensin I. Angiotensin I is converted to angiotensin II which stimulates aldosterone release. Elevated potassium also stimulates aldosterone release. Renin is produced in the juxtaglomerular apparatus.

**814.** A 55-year-old woman underwent a midurethral sling for stress incontinence five months ago. She now has dysuria, urgency and frequency despite antibiotic treatment for two documented UTIs. Urinalysis reveals 2-3 RBC/hpf. Pelvic ultrasonography reveals a postvoid residual of 50 ml. The next step is:

A) IVP.
B) uroflowmetry.
C) filling cystometry.
D) VCUG.
E) cystoscopy.

**Correct Answer** **E**

**Explanation** Cystoscopy is necessary to exclude the possibility of a foreign body in this setting.

**815.** GnRH agonist therapy for stage D1 prostate cancer will promote:

A) increased fat mass and decreased bone density.
B) decreased fat mass and decreased bone density.
C) decreased fat mass and increased bone density.
D) decreased body weight and decreased fat density.
E) increased body weight and increased bone density.

**Correct Answer** **A**

**Explanation** Androgen deprivation therapy will increase body weight from increased fat mass and increase bone resorption causing osteoporosis.

**816.** An eight-year-old boy was treated for lipomyelomeningocele at birth. He is on clean intermittent catheterization every four hours and oxybutynin 5 mg BID. He develops new incontinence. The next step is:

A) urodynamics.
B) MRI scan of spine.
C) increase catheterization frequency.
D) increase anticholinergics.
E) start imipramine.

**Correct Answer** **A**

**Explanation** This patient should undergo urodynamic evaluation to assess the etiology of the incontinence. This could be due to a variety of different factors. MRI of the spine would be indicated if the urodynamic study shows new abnormal findings. Other indications for spinal MRI include lower extremity weakness or other abnormal findings on neurologic exam. Implementing any additional treatment at this time without identifying the cause for the incontinence would be premature.

**817.** The earliest finding in diabetic voiding dysfunction is:

A) increased bladder capacity.
B) decreased bladder sensation.
C) impaired detrusor contractility.
D) high bladder compliance.
E) decreased uroflow.

**Correct Answer** **B**

**Explanation** Diabetic cystopathy is characterized by the insidious onset of impaired bladder sensation which progresses to infrequent voiding and increasing of bladder capacity. Overstretching of the bladder eventually leads to impaired detrusor contractility and decreased uroflow.

**818.** Pheochromocytomas that occur in association with the multiple endocrine adenoma (MEA) syndromes differ from sporadic pheochromocytomas in that:

A) bilateral occurrence is more common.
B) paroxysmal attacks occur more frequently.
C) extra-adrenal sites are more common.
D) hypertension is more severe.
E) secretion of norepinephrine alone is more common.

**Correct Answer** **A**

**Explanation** The clinical manifestations of pheochromocytoma in the familial syndromes are the same as those in sporadic cases except that in familial syndromes, the pheochromocytomas are almost always bilateral and more frequently malignant.

**819.** Percutaneous renal biopsy is contraindicated in a ten-year-old boy with:

A) severe hypertension.
B) nephrotic syndrome.
C) rapidly progressive glomerulonephritis.
D) a transplant kidney.
E) IgA nephropathy.

**Correct Answer** **A**

**Explanation** Nephrotic syndrome, rapidly progressive glomerulonephritis and renal transplant with diminished function are common indications for renal biopsy. In a child this age, access to the kidney can be carried out with heavy sedation. The presence of severe hypertension is associated with a significant risk for hemorrhage post-biopsy.

**820.** One month after L-5 laminectomy, a 30-year-old woman develops lower extremity weakness, a residual urine of 300 ml, and intermittent urinary stream. Videourodynamics demonstrates detrusor-sphincter dyssynergia. The most likely explanation is:

A) pseudodyssynergia.
B) recurrent lumbar disk.
C) cauda equina syndrome.
D) undiagnosed multiple sclerosis.
E) permanent nerve injury from disk.

**Correct Answer** **D**

**Explanation** The urodynamic finding of detrusor-sphincter dyssynergia indicates that a suprasacral spinal lesion is present. This cannot be explained by a L-5 lumbar disk. A herniated disk at this level should not cause an uncoordinated bladder outlet. The most likely supraspinal lesion in a woman this age would be multiple sclerosis.

**821.** A 25-year-old sexually active woman has asymptomatic bacteriuria. A clean catch midstream urine culture demonstrates > 100,000 E. coli CFU/ml. The next step is:

A) observation.
B) renal ultrasound.
C) catheterized urine culture.
D) antibiotic therapy.
E) cystoscopy.

**Correct Answer** **D**

**Explanation** Asymptomatic bacteriuria in young, sexually active women is a strong predictor of subsequent symptomatic urinary tract infection. Asymptomatic bacteriuria should be treated in this patient population because therapy is effective and recurrence is rare. However, in older women therapy is less effective and rapid recurrence is common.

**822.** Renal function in the newborn is similar to that in the adult with regard to:

A) free water clearance.
B) urinary concentration.
C) glomerular filtration rate.
D) bicarbonate reabsorption.
E) urinary acidification.

**Correct Answer** **A**

**Explanation** Studies on various aspects of renal function demonstrate an immaturity of all of the renal functions listed except free water clearance (urinary-diluting capacity). The newborn kidney is able to dilute the urine as well as an adult, lowering urinary osmolality to 50 mOsm/l.

**823.** A 61-year-old woman becomes incontinent immediately after transvaginal repair of a Grade III cystocele. This is most likely due to:

A) detrusor instability.
B) partial bladder denervation.
C) underlying urethral deficiency.
D) surgical damage to the urethral sphincter.
E) bladder neck and proximal urethral obstruction.

**Correct Answer** **C**

**Explanation** The most common cause of the onset of urinary incontinence after repair of a large cystocele is underlying urethral dysfunction which is unmasked by reduction of the cystocele. Cystocele repair should not cause incontinence due to urethral and bladder denervation or obstruction of the proximal urethra. Cystocele repair is typically associated with improvement in both bladder emptying and urge incontinence. Thus, either urethral hypermobility or intrinsic sphincter deficiency is likely to be the cause of incontinence in this setting.

**824.** Normal vaginal flora such as lactobacillus protect the estrogenized vaginal vestibule from Enterobacteriaceae colonization by:

A) maintenance of alkaline pH.
B) increasing secretory IgA production.
C) production of zinc containing antibacterial factor.
D) blockade of bacterial adherence.
E) increasing oogonial IgG production.

**Correct Answer** **D**

**Explanation** Normal lactobacillus colonization of the vaginal entroitus decreases colonization of Enterobacteriaceae by maintaining an acidic vaginal fluid. It has also been demonstrated that fragmentation of lactobacillus cell walls blocks the adherence sites for Enterobacteriaceae.

**825.** A seven-year-old girl has diurnal enuresis that is not associated with infection. She has marked constipation and encopresis. Her physical examination reveals a normal appearing spine, and a normal neurologic examination. Her bladder is not percussible, and urinalysis is normal. The next step is timed voiding and:

A) spinal MRI scan.
B) VCUG.
C) urodynamic evaluation.
D) oxybutynin.
E) laxatives/enemas.

**Correct Answer** **E**

**Explanation** In the absence of a urinary tract infection, a VCUG or urodynamic evaluation is overly invasive. A spinal MRI scan is not warranted in the absence of any neurologic abnormality or spinal defect. Although oxybutynin is acceptable empiric treatment, it will likely make the constipation worse. Aggressive treatment of the constipation has been shown to benefit not only the encopresis, but also the urinary incontinence.

**826.** A 35-year-old T-10 paraplegic man who has managed his bladder for five years using a condom catheter has mild bilateral hydroureteronephrosis. CMG demonstrates a progressive increase in bladder pressure with filling, until a pressure of 60 cm H2O is achieved at 200 ml. The most appropriate treatment is:

A) bladder augmentation.
B) clean intermittent catheterization and anticholinergics.
C) external sphincterotomy.
D) bethanechol.
E) alpha blocker.

**Correct Answer** **B**

**Explanation** Some men with complete upper motor neuron lesions from spinal cord injury can void spontaneously into a condom catheter by reflex detrusor contraction. However, some degree of detrusor sphincter dyssynergia is usually present. After several years of voiding against a closed sphincter, bladder compliance decreases and high filling pressures lead to upper tract deterioration. Anticholinergic therapy combined with clean intermittent catheterization (CIC) should be the initial therapy. Bladder augmentation is reserved for patients who have failed IC. External sphincterectomy should not be a first line therapy in patients with hand function adequate to perform IC, assuming bladder pressures can be controlled with anticholinergics. The literature demonstrates bethanechol does not improve bladder emptying. This drug is contraindicated in the presence of hyperreflexia and high voiding pressures.

**827.** A 49-year-old diabetic woman has acute left flank pain. Blood pressure is 96/50 and pulse 118. Serum creatinine is 1.3 mg/dl and hemoglobin 9.8 g/dl. CT scan demonstrates a 5 cm solid lower pole mass and large left perirenal hematoma. Precontrast images of the mass measure -54 HU which enhances following I.V. contrast. The right kidney is normal. The next step is:

A) observation with follow-up CT scan.
B) selective renal arterial embolization.
C) percutaneous radiofrequency ablation.
D) partial nephrectomy.
E) total nephrectomy.

**Correct Answer** **B**

**Explanation** Retroperitoneal hemorrhage with a renal angiomyolipoma is the most significant complication associated with this benign tumor and occurs in up to 10%25 of patients. Most patients require total nephrectomy if explored. In the setting of tuberous sclerosis, bilateral disease, renal insufficiency, or other comorbidities that may affect renal function, selective renal arterial embolization should be considered and will prove definitive in most cases.

**828.** Paternity potential in males with spina bifida correlates positively with:

A) serum testosterone level.
B) sacral neurologic level of lesion.
C) reflexogenic erections.
D) shunt-dependent hydrocephalus.
E) glans penis sensation.

**Correct Answer** **B**

**Explanation** Studies on sexual function in males with spina bifida have demonstrated that paternity is associated with an L5 or sacral neurologic level. This neurologic level was present in 80%25 of patients who fathered children. An ambulatory status and no ventriculoperitoneal shunt are other important factors associated with paternity. Serum testosterone levels are usually normal. Reflexogenic erections are present in the majority of spina bifida patients and are not predictive of paternity.

**829.** The failure of bethanechol for the treatment of incomplete voiding relates to:

A) patient compliance.
B) visual disturbances.
C) poor GI absorption.
D) discoordinated contraction of bladder, bladder neck and urethra.
E) predominance of M-1 muscarinic receptors in the bladder.

**Correct Answer** **D**

**Explanation** Pharmacologic activation of muscarinic receptors to enhance voiding often cause simultaneous contraction of the bladder, bladder neck and urethra preventing coordinated and complete bladder emptying.

**830.** A 19-year-old man has headaches, polydipsia, and polyuria. He has hypokalemia and an elevated peripheral vein renin. Abdominal CT scan demonstrates a 2 cm mass adjacent to or involving the upper pole of the right kidney; the left kidney is normal. The most likely diagnosis is:

A) adrenal cortical carcinoma.
B) juxtaglomerular cell tumor.
C) pheochromocytoma.
D) renal cell carcinoma.
E) aldosteronoma.

**Correct Answer** **B**

**Explanation** The findings in this patient are a classic history as well as laboratory and radiographic findings of a juxtaglomerular cell tumor. These rare, benign tumors occur most commonly in people less than 20 years of age and are curable by surgical excision. The hypokalemia results from secondary hyperaldosteronism. Patients with aldosteronomas should have suppressed plasma renin levels. These findings are not characteristic of the other tumors listed. Pheochromocytomas cause hypertension by release of sympathetic amines and do not cause hypokalemia.

**831.** A two-month-old girl with a high myelomeningocele closed at birth is managed with diaper voiding. She recently had a febrile UTI. Videourodynamics shows bilateral Grade V reflux, a thick-walled bladder, and leakage around a 5 Fr urethral catheter at 40 ml volume and 50 cm H2O pressure. The next step is:

A) vesicostomy.
B) conduit diversion.
C) antibiotics and oxybutynin.
D) augmentation and bilateral reimplants.
E) bilateral reimplants and clean intermittent catheterization.

**Correct Answer** **A**

**Explanation** This patient has high-grade reflux and a small bladder capacity with poor compliance. This is combined with high urethral resistance. Antibiotics alone with/without reimplants would be inadequate therapy. With Grade V reflux and a bladder volume of only 40 ml (which would predominantly be made up of the volume of the upper tracts) and high urethral pressure, ureteral reimplantation without correction of the poor bladder compliance would be inadequate. Clean intermittent catheterization may be helpful for the short-term; however, dangerously low compliance would make catheterization alone not optimal therapy. Augmentation with reimplants and intermittent catheterization may ultimately be the therapy of choice, but is probably not the best therapy for a two-month-old. Vesicostomy would provide temporary effective therapy.

**832.** An 85-year-old man has bothersome lower urinary tract symptoms. He underwent TURP 12 years ago. Urinalysis and urine cytology are negative. The most important test before considering repeat TURP is:

A) serum creatinine.
B) residual urine.
C) urine flow rate.
D) cystoscopy.
E) pressure-flow study.

**Correct Answer** **E**

**Explanation** Persistent or recurrent LUTS may occur after TURP. Since less than 20%25 of these men have any evidence of recurrent or persistent bladder outlet obstruction, assessment with pressure-flow studies are particularly useful to make determinations regarding the appropriateness of further surgical intervention. Many of these patients' symptoms are due to poor bladder contractility or detrusor overactivity. The urine flow test alone may be used for screening purposes, although it may be misinterpreted in the presence of high-flow, high-pressure voiding. Cystoscopy will rule out a stricture or bladder neck contracture but the presence of visually obstructing prostatic tissue does not correlate with bladder outlet obstruction.

**833.** Patients with von-Hippel Lindau disease most frequently have:

A) renal angiomyolipoma.
B) cafe au lait spots.
C) glioblastomas.
D) thyroid carcinoma.
E) retinal angiomas.

**Correct Answer** **E**

**Explanation** Patients with von-Hippel Lindau disease may have hemangioblastomas of the cerebellum, renal cell carcinomas, and cystadenomas of the epididymis. The diagnosis, however, can often be made most easily with inspection of the retina with identification of angiomas.

**834.** A 13-year-old boy falls from a tree and develops gross hematuria. CT scan shows a left renal laceration extending into the collecting system with significant urinary extravasation. Contrast is seen in the distal ureter. Three weeks following the injury, he develops a low grade fever, an ileus and a tender distended abdomen. CT scan shows a large left urinoma. The next step is:

A) placement of urethral catheter.
B) percutaneous nephrostomy drainage.
C) open surgical drainage and renorrhaphy.
D) percutaneous drainage of the urinoma.
E) placement of a ureteral stent.

**Correct Answer** **D**

**Explanation** Although major renal trauma can be managed conservatively, there is no consensus on the treatment of patients with significant renal injury involving a laceration extending into the collecting system with significant urinary extravasation. For patients in whom a urinoma develops, percutaneous catheter drainage should be considered initially. If the leak persists, an indwelling ureteral stent or percutaneous nephrostomy can be placed. These procedures usually obviate the need for open surgery.

**835.** The risks of acute urinary retention and the need for BPH related surgery are significantly reduced by:

A) saw palmetto.
B) doxazosin.
C) Serenoa repens.
D) doxazosin and Serenoa repens.
E) finasteride and doxazosin.

**Correct Answer** **E**

**Explanation** The 5-alpha-reducatase inhibitor finasteride, either alone or in combination, significantly reduced the risk of acute urinary retention and risk for BPH-related surgery. The use of the alpha-blocker doxazosin as monotherapy did prolong time to progression for acute urinary retention, but did not reduce overall risk for acute urinary retention.

**836.** The most frequent complications associated with the use of mitomycin C for intravesical therapy are:

A) chemical cystitis and rash.
B) myelosuppression and rash.
C) flu-like symptoms and myelosuppression.
D) contracted bladder and chemical cystitis.
E) myelosuppression and chemical cystitis.

**Correct Answer** **A**

**Explanation** Rash occurs in 9%25 of patients receiving mitomycin C instillations, and may represent a contact dermatitis. Chemical cystitis has been reported in 6-41%25 of patients managed with this agent. The molecular weight of mitomycin C is so high that little is absorbed and myelosuppression is rare. A contracted bladder is also rare after mitomycin C treatment. Flu-like symptoms, which are commonly seen after BCG and interferon therapy, are uncommon after intravesical chemotherapy.

**837.** The most likely pattern of hormonal secretion in a 46-year-old woman with Cushing syndrome from an adrenal adenoma is:

A)
B)
C) <tab>Corticotrophin Releasing Hormone<tab><tab>ACTH
D) <tab><tab><tab>â†“<tab><tab>â†‘
E) <tab><tab><tab>â†‘<tab><tab>â†‘

**Correct Answer** **<tab><tab><tab>â†‘<tab><tab>â†“**

**Explanation** <tab><tab><tab>â†“<tab><tab>â†“

**838.** A 28-year-old paraplegic man had a sphincterotomy seven years ago and wears a condom catheter. During an evaluation for renal insufficiency, renal ultrasonography reveals bilateral hydroureteronephrosis. The study most predictive of this complication is:

A) EMG.
B) CMG.
C) Valsalva leak point pressure.
D) detrusor leak point pressure.
E) urethral pressure profilometry.

**Correct Answer** **D**

**Explanation** Detrusor leak point pressure is the most reliable urodynamic parameter to predict the risk of upper tract deterioration after sphincterotomy. A detrusor leak point pressure of higher than 40 cm H2O indicates that the sphincterotomy has failed.

**839.** A 65-year-old man has a large renal mass. An abdominal CT scan and a bone scan show no metastases. Serum alkaline phosphatase and liver function studies are normal, and the serum calcium is 11.2 mg/dl. The next step is:

A) serum parathyroid related protein.
B) ultrasound of neck.
C) MRI scan of abdomen.
D) MRI skeletal survey.
E) chest CT scan.

**Correct Answer** **E**

**Explanation** Renal cell carcinomas are associated with a variety of paraneoplastic syndromes including hypercalcemia which is thought to be due to tumor production of a parathyroid related protein. This can be due to the production of this substance by the primary tumor, but is most frequently seen in patients with metastatic disease. In the absence of metastatic disease, however, resection of the primary should be undertaken. The measurement of serum parathyroid related protein would not change management in this case. The most likely site of metastatic disease described here is in the chest so a chest x-ray or CT scan should be obtained.

**840.** A four-year-old boy fell from a second story window. On examination, his vital signs are stable, but he has right flank and upper quadrant abdominal tenderness and fullness. He does not have peritoneal signs. Urinalysis is negative. The next step is:

A) observation.
B) abdominal paracentesis.
C) abdominal and renal ultrasound.
D) IVP.
E) abdominal CT scan.

**Correct Answer** **E**

**Explanation** This boy has suffered a rapid deceleration injury. A pedicle injury or complete avulsion of the UPJ should be suspected. These can both occur without hematuria. Hence, observation would be inappropriate. An abdominal tap for blood would not diagnose a renal injury. An ultrasound would likely not be diagnostic. CT scan is more likely to be diagnostic than an IVP and would help identify other abdominal injuries.

**841.** Prostaglandin E1 relaxes corporal cavernosal smooth muscle by:

A) releasing nitric oxide.
B) blocking calcium efflux.
C) raising cyclic GMP.
D) raising cyclic AMP.
E) opening potassium channels.

**Correct Answer** **D**

**Explanation** Release of nitric oxide, blocking calcium efflux, raising cGMP or opening potassium channels all relax penile smooth muscle. Prostaglandin E1 specifically increases cAMP. This is important since other agents may work at separate sites with the same or opposing results.

**842.** A healthy 50-year-old man with gross hematuria has a peripherally located 4 cm solid mass in a solitary kidney. The serum creatinine is 1.2 mg/dl. CT scan demonstrates a 1 cm renal vein tumor thrombus. There is no evidence of metastasis. The next step is:

A) radiofrequency ablation.
B) laparoscopic cryoablation.
C) partial nephrectomy.
D) radical nephrectomy.
E) systemic immunotherapy.

**Correct Answer** **D**

**Explanation** Under usual circumstances a peripherally located tumor in a solitary kidney is best managed by partial nephrectomy, both for potential cure and to prevent the need for dialysis. However, the presence of a venous thrombus makes complete tumor excision less likely and is associated with a high likelihood of tumor recurrence and poor prognosis after partial nephrectomy. Given the patient's good health, long life expectancy, and episode of gross hematuria, observation is likely to result in further tumor progression, more bleeding or other local symptoms which may require intervention, and potentially metastatic disease. Laparoscopic cryoablation is an investigative technique best used for smaller tumors and will not control the tumor thrombus. Systemic immunotherapy rarely results in a response in the primary tumor and is unlikely to be curative. Thus, the best choice is radical nephrectomy which will result in the need for dialysis. A prolonged disease-free interval would make the patient eligible for subsequent renal transplantation. Selective angioinfarction of the tumor is another alternative which could be used for palliation of the bleeding, but

**843.** Persistent urinary incontinence following resection of posterior urethral valves is most frequently due to:

A) detrusor instability.
B) vesicoureteral reflux.
C) non-compliant bladder.
D) incompetent bladder neck.
E) damaged external urethral sphincter.

**Correct Answer** **A**

**Explanation** Urinary incontinence following surgery for posterior urethral valves is common. Although in some instances this is secondary to the primary surgery in the urethra or bladder neck, the most common finding is detrusor instability.

**844.** A 58-year-old diabetic man has a tender, fixed scrotal pump two weeks after insertion of an inflatable penile prosthesis. There is no purulent drainage from the wound. Serum glucose is 450 mg/dl, serum bicarbonate is 10 mM/l, and WBC is 15,000. His urine is positive for ketones. The next step is intravenous antibiotics and:

A) continued observation.
B) scrotal ultrasonography.
C) pelvic MRI scan.
D) salvage replacement of the prosthesis.
E) removal of the prosthesis.

**Correct Answer** **E**

**Explanation** This patient has all the signs for an infected implant that is complicated by ketoacidosis. This precludes a salvage procedure or observation with antibiotics.

**845.** A 23-year-old man has a persistent 5 cm inter-aortocaval mass after three cycles of BEP chemotherapy for a left mixed germ cell tumor. Serum tumor markers are normal. During retroperitoneal lymphadenectomy, the mass is densely adherent to the aorta and vena cava. An incisional biopsy of the mass reveals fibrosis. The next step is:

A) complete retroperitoneal lymphadenectomy.

B) terminate lymphadenectomy and follow tumor markers.

C) sample para-aortic and paracaval nodes.

D) completely resect residual mass.

E) perform left side template dissection.

**Correct Answer** **A**

**Explanation** Following chemotherapy for retroperitoneal metastases from non-seminomatous germ cell tumors, teratoma will be found in approximately 40%25 of patients. When this is found, complete resection is mandatory for a number of reasons. Although the teratoma may be benign, continued growth of the tumor can lead to significant morbidity and the tumor can become unresectable. Additionally, complete pathologic evaluation will detect foci of residual cancer in up to 20%25 of patients.

**846.** Ultrasound of a newborn boy with an abdominal mass shows an enlarged kidney containing large cystic spaces that do not appear to communicate with one another. The best test to confirm the diagnosis is:

A) CT scan.
B) IVP.
C) retrograde pyelogram.
D) DMSA renal scan.
E) antegrade pyelogram.

**Correct Answer** **D**

**Explanation** The diagnosis of multicystic kidney and its differentiation from hydronephrosis is usually suggested by ultrasonography. A DMSA or MAG-3 renal scan is necessary to confirm absence of renal function in the multicystic dysplastic kidney. In most cases, hydronephrosis will display prominent blood flow and renal function whereas the multicystic kidney will not. A CT scan and IVP cannot make this differentiation. A retrograde pyelogram is inappropriately invasive. While an antegrade pyelogram can provide discriminating information, it is likewise invasive and not necessary in most cases.

**847.** A 38-year-old paraplegic man has a sustained erection of ten hours duration following the intracorporeal injection of 10 ug of prostaglandin E1. The next step is intracorporeal injection of:

A) epinephrine.
B) phentolamine.
C) phenylephrine.
D) terbutaline.
E) phenoxybenzamine.

**Correct Answer** **C**

**Explanation** Blood flow to the penis is increased by drugs that elicit corporal smooth muscle relaxation. The treatment of priapism resulting from intracavernous drug therapy, if simple irrigation is unsuccessful, is with an alpha-agonist. While epinephrine would be effective, its beta-agonist activity may promote cardiovascular side effects. Therefore, phenylephrine is the correct answer.

**848.** A 26-year-old man undergoes a left radical orchiectomy for seminoma. A CT scan reveals two 3 cm inter-aortocaval nodes at L3, and one 3 cm para aortic node at L4. The AFP is 25 IU/ml (0-10 IU/ml), and beta-hCG is 8 mIU/ml (0-10 mIU/ml). The next step is:

A) infradiaphragmatic radiation therapy.

B) cisplatin-based chemotherapy.

C) infradiaphragmatic plus supradiaphragmatic radiation therapy.

D) retroperitoneal lymphadenectomy.

E) retroperitoneal lymphadenectomy plus cisplatin-based chemotherapy.

**Correct Answer** **B**

**Explanation** Although the histological diagnosis is seminoma, the elevated alpha-fetoprotein is indicative of a non-seminomatous testis tumor, and the patient should be managed as such. The orchiectomy specimen should be re-evaluated in detail to look for an additional germ cell elements. Given the findings on the CT scan, this patient has a clinical Stage IIC tumor. Based on the data available in the literature, it appears these patients are best served with initial chemotherapy rather than retroperitoneal lymph node dissection following the inguinal orchiectomy. The most widely utilized regimen today is three cycles of bleomycin, etoposide (VP-16), and cisplatin. If residual nodal tissue is evident after the multidrug chemotherapy, surgical excision is recommended. With the evolution of effective multi-drug regimens, radiation therapy is no longer utilized in the management of Stage IIC non-seminomatous testis tumors.

**849.** In patients with pelvic nodal metastasis at cystectomy for transitional cell carcinoma of the bladder, the prognosis depends on primary bladder tumor stage, the number of involved nodes and:

A) tumor grade.
B) p53 status of primary tumor.
C) DNA ploidy status of primary tumor.
D) prostatic urethral involvement.
E) number of lymph nodes removed.

**Correct Answer** **E**

**Explanation** A number of recent studies have demonstrated that the quality and extent of lymphadenectomy during radical cystectomy have significant impact on subsequent mortality from bladder cancer.

**850.** A 27-year-old man states that since a radical orchiectomy for Stage A seminoma six months previously, the frequency and quality of his erections have been poor. He received radiotherapy to periaortic nodes. The last treatment was two months after the orchiectomy. His chest x-ray, serum markers, glucose, and testosterone are normal. The next step is:

A) intracavernosal injection therapy.
B) sexual dysfunction counseling.
C) intraurethral alprostadil.
D) nocturnal penile tumescence studies.
E) testosterone patch.

**Correct Answer** **B**

**Explanation** The patient should be told that during the early months after surgery, depression and loss of vigor are common along with an impaired sense of body image and mood disturbances. Patients cured of testis cancer rarely have persistent emotional disturbances. Sexual drive does not appear to be permanently disrupted by curative therapy. Crutches such as testosterone and other drugs, such as yohimbine, should be avoided. With time and reassurance, he should recover his normal libido and potency. Reassessment of such patients one year after treatment has shown that depression and mood disturbances have usually cleared.

**851.** Tumor recurrence in the wound following partial cystectomy for transitional cell carcinoma of the bladder is most effectively minimized by:

A) intravesical BCG.
B) wound irrigation and packing.
C) electrocautery.
D) postoperative radiation therapy.
E) preoperative radiation therapy.

**Correct Answer** **E**

**Explanation** The incidence of tumor recurrence in the wound following partial cystectomy can be reduced by preoperative radiation therapy. Without the use of preoperative radiation therapy wound implantation rates of 10-20%25 have been reported. This implantation rate can be reduced by the administration of 1000-1200 rads immediately preoperatively. Unfortunately, tumor recurrence rates within the bladder of as high as 70%25 have been reported with high grade tumors, making partial cystectomy useful in only a very small portion of patients.

**852.** In a duplicated urinary system, obstructive hydronephrosis in the lower pole system is usually due to:

A) orthotopic ureterocele.
B) ectopic ureter.
C) ureteropelvic junction obstruction.
D) ectopic ureterocele.
E) ureterovesical junction obstruction.

**Correct Answer** **C**

**Explanation** Obstruction of the upper pole moiety in complete ureteral duplication is usually due to ectopic ureter or ureterocele. Obstruction in the lower pole moiety in both complete and incomplete ureteral duplication is usually due to UPJ obstruction.

**853.** A 25-year-old man has inadequate erections since sustaining a pelvic fracture in a motor vehicle accident two years ago. After a successful urethral stricture repair, he denies any difficulty with orgasm and ejaculation. Intracavernosal injection of 15 ug of prostaglandin E1 produces a soft erection. The next step in evaluation should be:

A) infusion cavernosography.
B) pelvic/pudendal arteriography.
C) infusion cavernosometry.
D) intracavernosal injection of 30 ug of prostaglandin E1.
E) color Doppler study of penile arteries.

**Correct Answer** **E**

**Explanation** This young patient most likely has either an arterial or a neurologic injury to explain his erectile difficulty. A neurologic lesion is less likely because of his failure to respond with an erection to a reasonable dose of prostaglandin E1. Patients with neurogenic injuries frequently respond to very low doses of intracavernosal agents. The major clinical question which needs to be answered is whether or not this patient has an arterial injury. Infusion cavernosography and infusion cavernosometry are studies which demonstrate the extent and site of corporovenous leakage. Fifteen ug of prostaglandin E1 is a reasonable dose of drug to administer and increasing the dose to 30 ug would likely not produce more information. The study of choice to determine the presence of arterial disease in this clinical situation is a color Doppler study of the penile arteries before and after the intracavernosal injection of vasoactive drugs. Only after arterial disease has been diagnosed and only when operative revascularization is under consideration should pelvic/pudendal arteriography be performed.

**854.** A 58-year-old diabetic man has gross hematuria, a small filling defect in the left renal pelvis, and a normal right collecting system and ureter on retrograde pyelography. Prior history includes three transurethral resections of Grade I, Stage Ta(O) transitional cell bladder tumors during the past two years. Serum creatinine is 2.4 mg/dl. Renal sonography is normal. Ureteral urine cytologies are positive on the left side only. The next step is:

A) percutaneous mitomycin C.
B) retrograde BCG instillation.
C) ureteroscopy.
D) percutaneous nephroscopy.
E) nephroureterectomy.

**Correct Answer** **C**

**Explanation** The history is suggestive of upper tract transitional cell carcinoma. The patient has renal impairment and diabetes. Presently, endoscopy for upper tract transitional cell carcinoma takes the form of ureteroscopy for biopsy and probably for excisional fulguration for ureteral lesions or small, less than 1 cm renal lesions and percutaneous nephroscopy and excision for larger renal lesions. Overall, either endosurgical approach should generally be limited to individuals with a solitary kidney and a low-grade, apparently low-stage tumor confined to a single focus or to those few individuals with two kidneys who either are too ill or have significant renal insufficiency such that nephrectomy is contraindicated.

**855.** A newborn boy with anemia and jaundice has an abdominal ultrasound that shows a left suprarenal mass. A follow-up ultrasound at one month reveals that the mass is slightly smaller, but is now calcified. Serum alpha-fetoprotein and a urinary VMA are normal. The next step is:

A) needle aspiration.
B) abdominal CT scan.
C) abdominal MRI scan.
D) exploratory laparotomy.
E) observation.

**Correct Answer** **E**

**Explanation** The most likely diagnosis is adrenal hemorrhage. Although a neuroblastoma is a possibility, it is not likely in this age group. Observation with repeat sonography will confirm that the lesion is getting smaller.

**856.** A penoscrotal approach is used for implantation of a semirigid penile prosthesis. The left cylinder is placed uneventfully. However, difficulty is encountered during placement of the right cylinder. Subsequently, both cylinders appear to lie on the same side of the penis. The next step is:

A) remove both cylinders; abandon procedure.
B) leave a single cylinder on the left side.
C) place a small dilator on the left and redilate the right corpus.
D) repair septal perforation.
E) urethroscopy.

**Correct Answer** **C**

**Explanation** Perforation of the septum between the corpora cavernosa is not uncommon, particularly distally. Distal crossover can be easily corrected by redilation of the corpus while maintaining a lateral course, and leaving a small dilator in the contralateral corpus.

**857.** A 40-year-old paraplegic man has an ileocecal pouch cutaneous continent diversion. After a fall, he is unable to obtain urine on catheterization and is seen in a local emergency room. The next step is:

A) place indwelling catheter.
B) flexible cystoscopy of pouch.
C) percutaneous drainage of the pouch.
D) pouchogram.
E) surgical exploration.

**Correct Answer** **D**

**Explanation** Intraperitoneal rupture of catheterizable pouches is more common in the neurologic patient in whom sensation of pouch fullness may be less distinct. Often there is associated mild abdominal trauma, such as a fall, antecedent to the rupture. The patient needs radiographic pouch studies and pouch decompression. If the amount of urinary extravasation is small and the patient does not have a surgical abdomen, catheter drainage and antibiotic administration may suffice in treating intraperitoneal rupture of the pouch. For significant extravasation or a surgical abdomen, surgical exploration and pouch repair is required. The use of Coude-tip catheter, flexible cystoscope, and percutaneous drainage are used in acute pouch urinary retention.

**858.** The most compelling reason to use large bowel rather than small bowel in an undiversion procedure is a decrease in:

A) incidence of reflux.
B) intraluminal pressure.
C) incidence of malignancy.
D) mucous production.
E) incidence of bladder stones.

**Correct Answer** **A**

**Explanation** The clearest advantage is the ability to use the thicker muscle of the large bowel to tunnel an antirefluxing anastomosis. Problems with mucous are greater than with small bowel and the incidence of malignancy may be higher with large bowel. The intraluminal pressure is higher with large bowel.

**859.** A 53-year-old diabetic man sustains a minor proximal crural perforation during primary implantation of a three-piece inflatable penile prosthesis via a penoscrotal approach. The best management is:

A) abort the procedure.
B) secure exit tubing of the ipsilateral cylinder.
C) extend corporotomy for primary repair.
D) place malleable implant.
E) direct closure via perineal approach.

**Correct Answer** **B**

**Explanation** A common intraoperative complication with penile prosthesis surgery is crural perforation. If this occurs with insertion of an inflatable device with attached tubing, placing a tunica albuginea closure suture on either side of the exit tubing to keep the cylinder in place has worked sufficiently without requiring a more extensive repair.

**860.** In a patient with squamous cell carcinoma of the penis, positive inguinal lymph nodes are most likely to be present with:

A) palpable lymph nodes at initial presentation.
B) non-palpable lymph nodes and a Tis of the entire glans.
C) non-palpable lymph nodes and a 4 cm T1 lesion of the shaft.
D) non-palpable lymph nodes and a T2 lesion of the glans.
E) T1 tumors on proximal shaft and glans.

**Correct Answer** **D**

**Explanation** 66-68%25 of patients with non-palpable inguinal lymph nodes and a T2 primary lesion will have positive nodes on inguinal node dissection. Fifty percent of palpable nodes at diagnosis harbor cancer with the remainder illustrating reactive hypertrophy due to inflammation associated with penile lesions. Less than 10%25 of superficial lesions are associated with lymph node metastasis.

**861.** A ten-day-old boy with a transverse colostomy performed for a high imperforate anus has a serum chloride of 115 mEq/l, sodium of 145 mEq/l, potassium of 4.5 mEq/l, and CO2 of 17 mEq/l. The most likely explanation for these findings is:

A) sepsis.
B) renal dysplasia.
C) severe hydronephrosis.
D) neurogenic bladder dysfunction.
E) electrolyte absorption from large bowel.

**Correct Answer** **E**

**Explanation** Genitourinary anomalies associated with imperforate anus are common. The most common is rectourethral fistula; present in 25%25 of all patients with imperforate anus and found much more commonly in the high or supra levator imperforate anus patient. Reflux is present in 19%, hydronephrosis without reflux in 12%, and dilated ureters without reflux in 7%25. Bilateral renal agenesis and dysplastic kidney each comprise 2%25. When a rectourethral fistula exists, urine can flow into the colon leading to electrolyte resorption and recurrent UTIs even after diverting colostomy.

**862.** The most definitive study to rule out traumatic bladder rupture is:

A) pelvic CT scan.
B) cystoscopy.
C) pelvic ultrasound.
D) CT cystogram.
E) IVP.

**Correct Answer** **D**

**Explanation** A CT cystogram and static cystogram are definitive imaging studies for the diagnosis of bladder rupture. Adequate distension of the bladder with contrast injection through the catheter is necessary to evaluate for bladder rupture. CT cystography provides additional anatomic detail over that provided by cystography alone. Small leaks are frequently missed on urography and standard CT scans because of temporary sealing by omentum or blood clots. Only full distension and post-drainage films will identify bladder rupture in such instances.

**863.** A 76-year-old woman has intermittent urethral bleeding and a 0.7 cm mass at the urethral meatus. Biopsy is positive for Stage A squamous cell carcinoma. No inguinal lymphadenopathy is present, and metastatic evaluation is negative. The next step is:

A) anterior pelvic exenteration.
B) combined interstitial and external beam radiation therapy.
C) partial urethrectomy and bilateral inguinal lymphadenectomy.
D) partial urethrectomy and adjuvant radiation therapy.
E) partial urethrectomy.

**Correct Answer** **E**

**Explanation** The recommended treatment of choice for squamous cell carcinoma confined to the distal one-third of the female urethra is partial urethrectomy. In some patients, a partial vulvectomy also may be necessary to ensure adequate surgical margins. As much as two-thirds of the distal urethra can be removed without compromise to continence. Inguinal lymphadenectomy is performed only in the setting of palpable nodes. Prophylactic lymphadenectomy is of no therapeutic benefit, but it can be the cause of significant morbidity.

**864.** A 12-year-old boy who has previously undergone an ileal augmentation catheterizes every four hours but develops recurrent bladder calculi. The most effective way to diminish recurrence is:

A) restrict dietary sodium.
B) potassium citrate.
C) daily bladder irrigation.
D) increase frequency of catheterization.
E) catheterize in the supine position.

**Correct Answer** **C**

**Explanation** The development of bladder calculi is a frequent complication following bladder augmentation. A patient who has had an excessive amount of ileum resected is at risk for enteric hyperoxaluria, however, this should not occur with routine ileal augmentation. Sodium restriction is unnecessary as this is not usually due to a metabolic abnormality. Catheterization in a supine position may result in retained urine which may lead to stone formation. Potassium citrate supplementation has not proven to be effective in reducing the incidence of bladder calculi after augmentation. The most effective means of preventing stone formation is daily bladder irrigation.

**865.** A 65-year-old man who underwent placement of an intraurethral stent for treatment of a recurrent bulbar urethral stricture has a markedly decreased urinary stream three months postoperatively. Urethroscopy demonstrates obstructive tissue protruding through the stent. The next step is:

A) balloon dilation.
B) replace stent.
C) urethroplasty.
D) suprapubic cystostomy.
E) endoscopic resection of tissue.

**Correct Answer** **E**

**Explanation** Hyperplastic tissue can sometimes protrude through endoluminal stents postoperatively. Careful resection of this tissue is often effective, as this hyperplastic reaction usually subsides over time.

**866.** A 40-year-old woman undergoes a partial nephrectomy for an incidentally-found 4 cm renal mass. Pathology shows a metanephric adenoma with a positive surgical margin. The next step is:

A) observation.
B) long-term antibiotics.
C) radiofrequency ablation.
D) external beam radiation.
E) radical nephrectomy.

**Correct Answer** **A**

**Explanation** Metanephric adenoma is a benign lesion of the kidney of uncertain etiology. It has a uniformly benign course, even with large lesions. Historically these lesions have been treated with radical nephrectomy because of inability to distinguish them from renal cancer on radiologic exam.

**867.** A premature infant requiring long-term intravenous alimentation and antibiotic therapy develops a left flank mass and hematuria. Ultrasonography reveals an echogenic mass within a hydronephrotic kidney. Renal scan shows decreased blood flow and function in the left kidney. Blood and urine cultures are positive for Candida albicans. In addition to systemic antifungal therapy, the next step is:

A) nephrectomy.
B) cutaneous loop ureterostomy.
C) percutaneous nephrostomy and antifungal irrigation.
D) ureteral stent.
E) ureteral stent and ESWL.

**Correct Answer** **C**

**Explanation** Percutaneous nephrostomy with antegrade antifungal irrigation coupled with systemic antifungal treatment is the mainstay of successful therapy for obstructing candidiasis in the infant urinary tract. Aggressive early therapy and repetitive monitoring with ultrasonography has doubled the survival rate in the last few years from less than 50%25 to nearly 100%25.

**868.** A 30-year-old man has a one-week history of priapism after a straddle injury. The corpora are aspirated, and a blood gas reveals a pH of 7.35, pO2 of 93 mm Hg, and a pCO2 of 30 mm Hg. He is treated twice with intracorporeal phenylephrine irrigation. Each time there is initial detumescence and rapid return to the erect state. The next step is:

A) methylene blue irrigation.
B) glanular-cavernosal shunt.
C) epinephrine irrigation.
D) oral terbutaline.
E) transarterial embolization.

**Correct Answer** **E**

**Explanation** The patient's history and clinical findings are all consistent with a nonischemic traumatic priapism due to an injury of the cavernosal artery with fistula formation. Although methylene blue irrigation, shunt, epinephrine irrigation, and oral terbutaline are all effective forms of treatment for priapism, the best treatment for traumatic priapism is arteriography to identify the injured vessel and then embolization. Observation is an alternative option.

**869.** A 22-year-old man has a Stage II nonseminomatous germ cell tumor. Serum AFP is 3,000 IU/ml and beta-hCG is 5,000 mIU/ml. One week after starting the first of four planned cycles of bleomycin, etoposide, and cisplatin chemotherapy, the serum AFP has risen to 3,200 IU/ml and beta-hCG to 6,000 mIU/ml. Chest x-ray remains normal. The next step is:

A) continue chemotherapy.
B) salvage chemotherapy.
C) stem cell transplantation.
D) increase cisplatin dose.
E) retroperitoneal lymphadenectomy.

**Correct Answer** **A**

**Explanation** An unpredictable rise in marker levels may occur from two to ten days after initiation of chemotherapy and is not associated with adverse outcome, so the correct choice is to continue with the planned therapy. A rise in tumor markers soon after initiation of therapy is probably due to tumor lysis rather than progression. Thereafter, tumor marker levels should fall exponentially with a half life of one to two days for beta-hCG and five to seven days for AFP. Plateau and subsequent rise of either marker often heralds failure of therapy.

**870.** A two-year-old girl has a febrile UTI with fever spikes continuing despite three days of I.V. antibiotics. The next step is:

A) VCUG.
B) MAG-3 scan.
C) DMSA scan.
D) renal ultrasound.
E) abdominal CT scan.

**Correct Answer** **D**

**Explanation** Persistent fever in the setting of UTI suggests an anatomic abnormality contributing to the infection, or less likely a renal abscess. In children, renal ultrasonography should be the initial imaging study for evaluation in this clinical setting. VCUG may fail to demonstrate an obstructive condition, IVP may not demonstrate a renal abscess well, and if there is absence of function in an affected renal unit, would not precisely define the condition. DMSA would not show anatomic detail. A CT scan provides enhanced anatomic detail and maybe required following a non-diagnostic ultrasound if symptoms persist.

**871.** A 45-year-old man has left flank pain four hours after blunt flank trauma. Physical examination is normal. His blood pressure is 110/60 mm/Hg, pulse is 80, and urinalysis demonstrates 5 RBC/hpf. The next step is:

A) IVP.
B) CT scan.
C) renal ultrasound.
D) isotope renography.
E) observation.

**Correct Answer** **E**

**Explanation** A review of 2,254 patients with suspected renal trauma seen from 1977 to 1992 was performed by McAninch and colleagues. Of the 1,588 blunt trauma patients with microscopic hematuria and no shock, three had significant injury but these cases were discovered during imaging or exploratory laparotomy for associated injury. Follow-up of 515 of 1,004 patients (51%) who did not undergo initial imaging revealed no significant complications. Adults with blunt renal trauma, microscopic hematuria and no shock (systolic pressure <90) or major associated intra-abdominal injuries can safely be spared radiographic imaging.

**872.** An 18-year-old man undergoes right radical orchiectomy. Pathology reveals mixed germ cell tumor with seminoma, yolk sac and choriocarcinoma. Serum markers show beta-hCG >50,000 IU/L, AFP 150 ng/dl, and LDH two times the upper limit of normal. CT of chest, abdomen and pelvis shows a large retroperitoneal mass. Prior to starting chemotherapy, further workup should be:

A) none.
B) bone scan.
C) brain MRI scan.
D) abdominal MRI scan.
E) PET scan.

**Correct Answer** **C**

**Explanation** The presence of choriocarcinoma and very high beta-hCG puts this patient at risk of hematogenous metastases, especially in the brain. A brain MRI scan should be performed prior to starting any chemotherapy. The role of PET scan in this setting is still investigational.

**873.** During embryologic development, the duct that passes through the umbilicus is the:

A) mullerian.
B) wolffian.
C) Gartner's.
D) Luschka's.
E) omphalomesenteric (vitelline).

**Correct Answer** **E**

**Explanation** The vitelline or omphalomesenteric duct is an attachment from the small intestine to the umbilicus. The other ducts mentioned are not found on the anterior abdominal wall. Purulent drainage from the umbilicus, although usually from a urachal remnant may be from the vitelline duct. If at the time of surgical exploration an omphalomesenteric duct is found, these patients may require partial small bowel resection.

**874.** A 40-year-old man suffers a gunshot to the abdomen with left ureteral transection at the L3 vertebral level, and a ureteroureterostomy is performed. Postoperatively, he is not able to flex his thigh or extend his leg. These deficits are due to dysfunction of the:

A) femoral nerve.
B) iliopsoas muscle.
C) genitofemoral nerve.
D) lateral femoral cutaneous nerve.
E) quadriceps femoris muscle.

**Correct Answer** **A**

**Explanation** The femoral nerve arises from the second, third, and fourth lumbar spinal segments. It appears at the lateral edge of the psoas muscle and descends into the thigh. It supplies a number of muscles including the quadriceps femoris complex, articularis genu, sartorius, pectineus and iliopsoas.

**875.** The main advantage of the Turnbull loop stoma versus an end stoma for an ileal conduit is:

A) lower incidence of parastomal hernia.
B) better appliance fit.
C) lower incidence of stomal prolapse.
D) less tension on the mesentery.
E) better cosmetic appearance.

**Correct Answer** **D**

**Explanation** Use of a loop stoma usually results in less tension on the mesentery of the ileum and allows easier creation of a stomal bud. This helps avoid stomal ischemia and results in a lower incidence of stomal stenosis. The loop stoma is especially useful in the obese patient where it may be otherwise difficult to obtain a good stomal bud which projects above skin level. Because of the larger fascial defect needed to construct a loop stoma they are more prone to parastomal hernia. The defunctionalized end of a loop stoma is also prone to prolapse. A well-constructed end or loop stoma should have similar cosmetic appearance and appliance fit.

**876.** The blood supply to an ileal conduit originates from the following artery:

A) superior mesenteric.
B) common iliac.
C) inferior mesenteric.
D) circumflex iliac.
E) celiac.

**Correct Answer** **A**

**Explanation** The superior mesenteric artery is the blood supply to the small bowel and proximal colon. The inferior mesenteric artery supplies blood to the mid and distal colon. The celiac axis provides blood to the liver, spleen, stomach, pancreas and duodenum. The iliac and circumflex iliac arteries do not provide blood supply to the intestine.

**877.** The upper ureter is more susceptible to serious injury during endourological procedures because it:

A) is less distensible.
B) has thin submucosa.
C) has thin muscularis.
D) has thin mucosa.
E) has variable blood supply.

**Correct Answer** **C**

**Explanation** The ureteral wall consists of three different layers. However, the composition of these layers is not constant for the entire length of the ureter. The mucosa, which is four or five cell layers thick, consists of transitional epithelium, and a lamina propria with loose or dense connective tissue, but not a distinct submucosa. The muscularis varies in its composition over the course of the ureter. In the proximal ureter, it consists of a thin, poorly defined inner circular and an outer longitudinal layer. Both the mid and distal ureter have a muscularis which is distinctly composed of an inner longitudinal, middle circular, and outer longitudinal fibers. This deficiency in the muscularis of the upper ureter and the geometric arrangement of large areas of collagenous connective tissue interspacing the muscle bundles is thought to make the upper ureter more susceptible to serious ureteral injury.

**878.** Six years after a radical cystectomy and continent cutaneous ileocecal diversion for a high grade, muscle invasive, transitional cell carcinoma of the bladder, a 71-year-old man has generalized weakness. Hematocrit is 31%25 and creatinine is 1.6 mg/dl. The most likely cause of anemia is:

A) tumor recurrence.
B) Vitamin B12 deficiency.
C) folic acid deficiency.
D) anemia of chronic disease.
E) iron deficiency.

**Correct Answer** **B**

**Explanation** In patients with significant loss of ileum, Vitamin B12 malabsorption has been reported and results in megaloblastic anemia and neurological abnormalities. Thirty-five percent of patients followed over five years after a Kock pouch were found to be deficient in one series. Yearly Vitamin B12 levels should be assessed starting 1-2 years after such procedures. Replacement can be by monthly injection or weekly intranasal gel.

**879.** A 56-year-old man undergoes a difficult radical perineal prostatectomy that lasts six hours. Postoperatively he has weakness of the left foot with inability to dorsiflex. The nerve most likely injured is the:

A) femoral.
B) genitofemoral.
C) sciatic.
D) obturator.
E) peroneal.

**Correct Answer** **E**

**Explanation** The patient has an injury to the common peroneal nerve. Of the lower extremity nerves, the common peroneal nerve is at greatest risk for injury. This occurs most commonly after operations in the lithotomy position. After leaving the popliteal fossa, the nerve crosses anterolaterally around the head of the fibula. In this superficial location over the bony prominence of the knee, it is exposed to compression injury. Stretching the nerve by knee and hip flexion also increases the risk for pressure injuries. This nerve supplies the tibialis anterior which provides dorsiflexion of the foot.

**880.** A 40-year-old obese Caucasian man is evaluated for irritative voiding symptoms. IVP demonstrates a teardrop-shaped elevated bladder, and medial deviation with fullness of the right ureter but no hydronephrosis. CT scan shows an extensive pelvic mass effect surrounding the bladder of fat density with areas of higher soft tissue density. The next step is:

A) pelvic laparotomy.
B) weight reduction.
C) corticosteroids.
D) percutaneous biopsy of mass.
E) renal ultrasound in three months.

**Correct Answer** **A**

**Explanation** Liposarcoma cannot be excluded without performing pelvic laparotomy. The areas of increased soft tissue density seen on CT scan suggest this diagnosis. Pelvic lipomatosis is another diagnostic consideration. It is twice as common in blacks. Needle biopsy is inadequate to exclude malignancy. Medial deviation of one ureter (right) must make one suspicious of a malignancy rather than pelvic lipomatosis since the latter generally causes symmetrical bilateral abnormalities or no effect on the ureter whatsoever. Findings at laparotomy favoring the diagnosis of lipomatosis are that the fat appears normal and is not encapsulated, whereas liposarcoma and lipoma are encapsulated. Liposarcoma is adherent to surrounding structures; complete surgical removal with adjuvant radiotherapy is recommended. Later ureteral obstruction by pelvic lipomatosis can occur, indicating the need for serial renal imaging. Weight reduction and corticosteroids are of little value.

**881.** The drug that can be reabsorbed by an ileal neobladder and result in toxic serum levels is:

A) phenytoin.
B) trimethoprim-sulfamethoxazole.
C) sildenafil.
D) warfarin.
E) furosemide.

**Correct Answer** **A**

**Explanation** Drugs which are excreted by the kidneys unchanged may be resorbed by the intestinal mucosa in urinary diversions, leading to toxic serum levels. Phenytoin is the only drug listed excreted into the urine unchanged and associated with toxicity in the setting of a urinary diversion.

**882.** A phenotypically normal three-year-old girl has bilateral inguinal hernias. During a hernia repair, a gonad is discovered within the hernia sac. Frozen section biopsy documents that it is a testis. These findings suggest:

A) persistent mullerian duct syndrome.
B) true hermaphroditism.
C) complete androgen insensitivity.
D) mixed gonadal dysgenesis.
E) adrenogenital syndrome.

**Correct Answer** **C**

**Explanation** In phenotypic females undergoing bilateral inguinal hernia repair, 3-5%25 will have testes located within the hernia sacs. These patients are invariably found to be have a 46 XY karyotype with complete androgen insensitivity secondary to defects in the androgen receptor. The testes will still produce mullerian inhibitory factor resulting in dissolution of the mullerian structures. Despite the presence of androgens, no masculinization or genital ambiguity will develop due to the defect in the androgen receptor. Persistent mullerian duct syndrome is found in phenotypic males with either unilateral or bilateral undescended testes, testicular descent being hindered by the persistence of the internal female organs. True hermahrodites, mixed gonadal dysgenesis and adrenogenital syndrome are associated with genital ambiguity.

**883.** The incision of the ureteropelvic junction during a percutaneous endopyelotomy should generally be:

A) partial thickness anteriorly.
B) full thickness posteriorly.
C) partial thickness posterolaterally.
D) full thickness laterally.
E) full thickness medially.

**Correct Answer** **D**

**Explanation** One anatomic study demonstrated a prominent vessel anterior to the UPJ in 65%25 of kidneys, and posterior to the UPJ in 6.2%25. Vessels lateral to the UPJ were not observed. Lateral incision should decrease the risk of vascular injury. Therapeutic regeneration of the ureter is thought to require a full thickness incision.

**884.** A 57-year-old woman undergoes left partial nephrectomy for a symptomatic angiomyolipoma. Ten days post operatively, she continues to drain 400 cc of urine per day from the flank. The next step is:

A) observation.
B) percutaneous nephrostomy tube.
C) ureteral stent.
D) urethral catheter.
E) surgical exploration.

**Correct Answer** **C**

**Explanation** The patient most likely has a urine leak from her partial nephrectomy. These leaks occur in approximately 15%25 of patients following this surgery. Placement of an internal ureteral stent generally corrects the situation without subsequent need for open repair. Greater than 95%25 of these patients will seal the leak with placement of a ureteral stent.

**885.** Urinary concentration is primarily the result of which characteristic of the kidney:

A) hypertonic medullary interstitial fluid.
B) absence of antidiuretic hormone.
C) hypotonic medullary interstitial fluid.
D) high levels of antidiuretic hormone.
E) hypertonic proximal tubular fluid.

**Correct Answer** **A**

**Explanation** Although 65%25 of sodium chloride and water are reabsorbed in the proximal tubule, the intraluminal fluid remains isoosmotic. Urinary concentration takes place as the tubular fluid flows through the medullary collecting ducts. The medullary interstitial hyperosmolarity in the presence of normal plasma concentrations of ADH causes water to diffuse out of medullary collecting ducts into the interstitial fluid and then into the medullary blood vessels. High ADH levels produce a more concentrated urine and low levels produce a more dilute urine.

**886.** Sarcoidosis induces nephrolithiasis by:

A) increasing PTH secretion.
B) increasing intestinal calcium absorption.
C) decreasing renal tubular calcium absorption.
D) increasing renal tubular calcium absorption.
E) decreasing intestinal calcium absorption.

**Correct Answer** **B**

**Explanation** One to 2%25 of patients with sarcoidosis have increased levels of 1, 25-(OH)2D produced by mononuclear phagocytes in the granulomas. Active vitamin D stimulates intestinal absorption of calcium and phosphate, suppresses PTH secretion and may augment bone resorption.

**887.** Three days following a right percutaneous nephrolithotomy, green fluid begins to drain through the nephrostomy tube. The patient is afebrile and has no abdominal tenderness. Contrast instilled into the tube immediately outlines the second part of the duodenum. The tube is repositioned into the renal pelvis. The next step is:

A) upper GI series.
B) nephrectomy and drainage.
C) right retrograde ureteropyelogram.
D) surgical exploration.
E) nasogastric suction and parenteral nutrition.

**Correct Answer** **E**

**Explanation** Bowel injuries occur in 0.1%25 of all cases of percutaneous nephrolithotomy. The most common site injured is the colon which usually occurs when the colon is retrorenal. This circumstance is more likely among patients with a megacolon or malpositioned kidney. When the colon is injured, the nephrostomy tube should be positioned until it is draining the colon (colostomy tube) and a ureteral stent should be placed for drainage of the kidney. Duodenal injuries are very rare and usually occur when the initial needle pass or dilation is made too deeply through the kidney. In the absence of infection (peritonitis), conservative management is indicated initially. Bowel rest should be instituted and adequate urinary tract drainage should be assured.

**888.** The first branch of the internal iliac (hypogastric) artery is the:

A) obliterated umbilical.
B) superior gluteal.
C) obturator.
D) superior vesical.
E) middle sacral.

**Correct Answer** **B**

**Explanation** This artery supplies the pelvic viscera, muscular part of the pelvis and gluteal area. The internal iliac begins at the level of the intervertebral disc between L5 and S1 where it is crossed by the ureter. It is separated from the sacroiliac joint by the internal iliac vein and lumbosacral trunk. It divides into an anterior and posterior division at the edge of the greater sciatic foramen. The posterior trunk is more cephalad and the superior gluteal is the first branch.

**889.** A 20-year-old man with cystinuria has recurrent calculi despite dietary therapy and hydration. The next step is:

A) acetohydroxamic acid.
B) Tham-E.
C) N-acetylcysteine.
D) D-penicillamine.
E) alpha-mercaptopropionylglycine.

**Correct Answer** **E**

**Explanation** Cystinuria should be managed initially with hydration and, perhaps, alkali therapy. The solubility of cystine does not significantly increase until the urinary pH reaches 7.5. At this pH, calcium phosphate precipitation may occur. Specific therapy would include use of either D-penicillamine or alpha-mercaptopropionylglycine. D-penicillamine is less well-tolerated and approximately 50%25 of patients stop this therapy due to side effects. Tham-E is an alkalinizing agent used for irrigation. Acetohydroxamic acid is a urease inhibitor used for the management of infection stones. Captopril may be effective in reducing urinary cystine excretion in patients who have not responded to therapy with alpha-mercaptopropionylglycine and D-penicillamine or who are intolerant of these agents.

**890.** The most common symptom or sign of a vesicoenteric fistula is:

A) diarrhea.
B) fecaluria.
C) weight loss.
D) fever.
E) gross hematuria.

**Correct Answer** **B**

**Explanation** The most common symptoms or signs of vesicoenteric fistulas are fecaluria, abdominal pain, and pneumaturia (48%25, 43%25, and 41%25 respectively in a recent series). Dysuria, gross hematuria, and diarrhea are less common (28%25, 16%25, and 11%25 respectively). Diverticulitis, colon cancer, and Crohn's disease account for 23%25 to 62%25, 18%25 to 20%25, and 6%25 to 9%25 of all vesicoenteric fistulas.

**891.** The posterior surface of the kidney is adjacent to the:

A) quadratus lumborum muscle and diaphragm.
B) psoas and latissimus dorsi muscles.
C) diaphragm and psoas muscle.
D) transversus abdominis and psoas muscles.
E) paraspinous and intercostal muscles.

**Correct Answer** **A**

**Explanation** The diaphragm extends around the posterior aspect of the kidney. The anteromedial surface of the kidney is adjacent to the psoas major but the posterior surface lies adjacent to the quadratus lumborum. The transversus abdominus muscle is more ventral.

**892.** Hyperuricosuria can cause calcium oxalate stones by:

A) homogenous nucleation.
B) reduction of monosodium urate.
C) heterogenous nucleation.
D) permissible incrementation.
E) induction of hypercalciuria.

**Correct Answer** **C**

**Explanation** Hyperuricosuria may promote calcium oxalate stone formation. Increased urinary uric acid will generate sodium urate crystals that can act as a nidus to cause precipitation of calcium oxalate crystals (heterogenous nucleation). Therefore, allopurinol is a treatment option for patients with hyperuricosuric calcium oxalate urolithiasis as it decreases urinary uric acid levels.

**893.** Cyclical hematuria after cesarean section is best treated with:

A) hysterectomy.
B) danazol.
C) surgical exploration.
D) leuprolide acetate.
E) intravesical formalin.

**Correct Answer** **C**

**Explanation** A fistula may occur between the bladder and uterus after cesarean section. These injuries may be very hard to diagnose but are usually easy to treat. The fistula is small and typically produces dampness rather than significant incontinence. Hematuria may occur during menses. The fistula site is seen on the posterior bladder wall, and biopsy of the tract reveals chronic inflammation and endometrial tissue. Treatment of vesicouterine fistulae requires dissection of the bladder off the fistula, excision of the fistula site, and bladder and uterine closure. Interposition of omentum may be used. Future child birth is possible.

**894.** In-vitro fertilization is associated with an increased incidence of which genitourinary anomaly:

A) hypospadias.
B) Wilms' tumor.
C) renal fusion anomalies.
D) exstrophy-epispadias complex.
E) ureteropelvic junction obstruction.

**Correct Answer** **A**

**Explanation** In-vitro fertilization is associated with a five-fold increased risk of hypospadias with or without associated cryptorchidism. The increased risk of male genital defects following in vitro fertilization is due to the routine use of supraphysiologic doses of progesterone to aid in embryo implantation following transfer. Progesterone acts as an anti-androgen in three separate ways; 1) Progesterone has weak affinity for the androgen receptor however in supraphysiologic doses it may compete with testosterone for receptor activation. 2) It can block the post-androgen receptor transcription of androgen stimulated proteins. 3) It can compete with testosterone for metabolism by the enzyme 5 alpha reductase thereby reducing the formation of the more potent androgen dihydrotestosterone.

**895.** Medical therapy of idiopathic uric acid renal calculi is directed toward:

A) decreasing purine intake.
B) increasing urinary pH.
C) increasing inhibitors of uric acid crystallization.
D) decreasing uric acid production.
E) decreasing uric acid excretion.

**Correct Answer** **B**

**Explanation** Patients with idiopathic uric acid stones have normal production and excretion of uric acid. Their primary abnormality is a relative increase in urinary acidity. At acid pH, uric acid tends to precipitate. Prevention of uric acid crystallization and dissolution of preformed stones is best accomplished by increasing urinary pH to 6.5-7.0. Hydration is also an important part of management.

**896.** A 45-year-old man has Cushing syndrome. Plasma cortisol levels are not suppressed with high-dose dexamethasone. Urinary 17-ketosteroid levels are 3124 mcg/24 hr (nl = 7-25) and urinary 17-hydroxysteroid levels are 271 mcg/24 hr (nl = 2 -10). The most likely diagnosis is:

A) pituitary adenoma.
B) ectopic ACTH production.
C) adrenal adenoma.
D) adrenal carcinoma.
E) adrenal hyperplasia.

**Correct Answer** **D**

**Explanation** This patient has non-suppressing elevated cortisol and high urinary ketosteriods. Multiple endocrine abnormalities are most common in adrenocortical carcinomas. Ectopic ACTH should not increase urinary ketosteroids.

**897.** A 45-year-old woman undergoes an abdominal CT scan because of vague abdominal pain and moderate hypertension. This demonstrates a 3.0 cm solid right adrenal mass. The next step is:

A) MRI scan with T1 weighted image.
B) right adrenalectomy.
C) needle biopsy of the mass.
D) iodocholesterol scan.
E) adrenal function studies.

**Correct Answer** **E**

**Explanation** Incidentally discovered adrenal masses represent a controversial area in management. Most agree that all lesions 6 cm or greater in diameter should be excised because of the risk of malignancy. With smaller lesions (< 3 cm) the presence of increased steroid or catecholamine production constitutes the major indication for intervention.

**898.** A 52-year-old woman has the acute onset of right flank pain. She has a long-standing history of diarrhea secondary to laxative abuse. Urinalysis shows numerous RBCs and a pH 6.5. While in the emergency room she passes a small stone. The most likely stone composition is:

A) xanthine.
B) uric acid.
C) struvite.
D) ammonium acid urate.
E) calcium phosphate.

**Correct Answer** **D**

**Explanation** Ammonium acid urate stones are rare. They are found in patients with chronic diarrhea and a history of laxative abuse. These patients have low urinary sodium excretion. Their urinary citrate levels are usually low secondary to bicarbonate loss from the gastrointestinal tract. Urine pH is usually above 6.3; when urine pH is below 5.5 uric acid will likely precipitate. Ammonium acid urate stones are also found in patients with ileal resection or with large portions of their colon removed. Chronic diarrhea and urinary tract infection are additional risk factors. Ammonium acid urate stones are relatively radiolucent and may be mistaken for uric acid stones. Ammonium acid urate stones do not dissolve with alkalinization.

**899.** A 65-year-old man with a PSA of 40 ng/ml is placed on an LH-RH agonist for metastatic prostate cancer. Six months later he has mild low back pain. His PSA is 0.4 ng/ml and his bone scan shows improved but persistent abnormalities in the lumbosacral spine. The next step is:

A) flutamide.
B) radiotherapy to the spine.
C) strontium-89.
D) analgesics.
E) orchiectomy.

**Correct Answer** **D**

**Explanation** A complete objective response on the bone scan occurs in only 7%25 of patients after hormonal therapy. The low PSA in this patient indicates that he continues to have a good response to hormonal therapy and no further treatment is indicated.

**900.** The most important prognostic factor in a patient with Wilms' tumor is:

A) age of the patient.
B) lymph node status.
C) intraoperative spillage.
D) tumor histology.
E) bilaterality.

**Correct Answer** **D**

**Explanation** Even though the age of the patient and the size of the tumor have an impact upon the ultimate outcome of children with Wilms tumor, they are not nearly as important as the histology of the lesion. Beckwith has clearly pointed out that children with favorable histology have a far better prognosis regardless of the stage of the lesion at the time of diagnosis than do children with unfavorable histology. Tumor spillage apparently has little to do with the ultimate outcome, and bilateral tumors would statistically appear to have a better prognosis than unilateral tumors.

**901.**

A)

B)

C)

D)

E)

**Correct Answer**

**Explanation**

**902.** Secretion of aldosterone is primarily mediated by:

A) ACTH.

B) renin.

C) serum potassium level.

D) sodium concentration in the proximal tubule.

E) sodium concentration in the collecting duct.

**Correct Answer** **B**

**Explanation** ACTH and serum potassium may increase aldosterone secretion but the effect is much less pronounced than that achieved by renin. The primary mechanism for control of aldosterone production resides in a feedback system involving the kidney and its juxtaglomerular apparatus. In the presence of appropriate stimuli (i.e., decreased renal perfusion pressure) juxtaglomerular cells release renin which eventuates in the production of angiotensin II. Angiotensin II is a potent stimulator of aldosterone output from the zona glomerulosa of the adrenal cortex.

**903.** The drug that blocks peripheral androgen action during chronic administration is:

A) ketoconazole.
B) alcohol.
C) cimetidine.
D) marijuana.
E) leuprolide.

**Correct Answer** **C**

**Explanation** Cimetidine (Tagamet) is an androgen antagonist that may cause gynecomastia and decreased sperm density. Ketoconazole interferes with normal steroidogenesis whereas alcohol, marijuana, and methadone may cause suppression of testosterone synthesis. This may be useful as a part of the history of the infertile patient.

**904.** In women with invasive carcinoma of the proximal urethra, the primary lymphatic site for metastatic disease is:

A) superficial inguinal.
B) deep inguinal.
C) external iliac.
D) hypogastric.
E) obturator.

**Correct Answer** **C**

**Explanation** The anterior (distal) urethra and labia drain to the superficial and then deep inguinal nodes, while the posterior (proximal) urethra drains primarily to the external iliac, and then secondarily to the hypogastric and obturator lymph nodes.

**905.** The effect of finasteride on serum and intraprostatic testosterone is:

A)

B)

C) <br><tab>Serum Testosterone<tab>Intraprostatic Testosterone

D) <tab><tab>â†‘<tab><tab>â†‘

E) <tab><tab>â†”<tab><tab>â†”

**Correct Answer** **<tab><tab>â†“<tab><tab>â†“**

**Explanation** <tab><tab>â†‘<tab><tab>â†“

**906.** A 48-year-old man and his 44-year-old wife wish to have another child. Fifteen years previously he had a vasectomy and four years ago he failed vasectomy reversal. No sperm were found in the vas at the time of surgery. The wife's menses are regular. The best chance for pregnancy is:

A) open epididymal aspiration with IVF and intracytoplasmic sperm injection.

B) needle aspiration of the testicle with IVF and intracytoplasmic sperm injection.

C) gynecologic evaluation of wife then bilateral vasoepididymostomy if her evaluation is normal.

D) donor eggs and needle aspiration of the testicle with IVF and intracytoplasmic sperm injection.

E) re-do microscopic two-layer vasovasostomy.

**Correct Answer** **D**

**Explanation** Results of standard IVF without intracytoplasmic sperm injection are extremely poor in women over age 40. With donor eggs the pregnancy rate is over 30%25. The overall rate of pregnancy after vasoepididymostomy is 30-50%25 but is dramatically lower with a wife of age 40.

**907.** A 55-year-old man with epigastric discomfort has a 5 cm right adrenal mass on CT scan. The mass measures -40 Hounsfield units. The next step is:

A) no treatment.
B) MRI scan.
C) 24-hour urine for metanephrines.
D) dexamethasone suppression test.
E) right adrenalectomy.

**Correct Answer** **A**

**Explanation** A mass with Hounsfield units between -30 and -140 is characteristic of an adrenal myelolipoma. These tumors are benign and are composed of lipid and myeloid tissue. No additional therapy or evaluation is required.

**908.** Reflex bladder and urethral activity are coordinated by a reflex center located in the:

A) sacral cord.
B) thoracic and sacral cord.
C) pons.
D) medulla.
E) basal ganglia.

**Correct Answer** **C**

**Explanation** The center for integration and coordination of bladder and urethral activity is in the pons based on minimal electrophysiology studies and lesioning or PET scans in the human. The sacral cord and thoracic cord, left to themselves after spinal cord injury, exhibit disorganized, antagonistic, poorly sequenced activity. The nucleus ceruleus is near the center but not itself involved, and the basal ganglia and medulla seem to be involved in modulation of detrusor activity and perhaps in facilitation of detrusor contractility but not integration of bladder and urethral response.

**909.** A 34-year-old man requests repair of his left-sided varicocele. Microsurgical varicocelectomy will likely result in:

A) increased testicular volume.
B) no change in testicular volume.
C) increased semen fructose.
D) increased ejaculate volume.
E) decreased semen pH.

**Correct Answer** **B**

**Explanation** Microsurgical varicocelectomy has been performed in hopes of increasing the fertility status of men. There is an association between testicular atrophy and ipsilateral varicoceles. Varicocele repair in adolescents has been associated with catch-up testicular growth. In adults however, there is no change in testicular volume when studied with ultrasonography. Varicocelectomy will not change libido, ejaculate volume or pH, or semen fructose levels.

**910.** The advantage of a non-refluxing ureterointestinal anastomosis is that it decreases:

A) upper tract colonization.
B) ureterointestinal stricture.
C) pressure transmission to the upper urinary tract.
D) metabolic abnormalities.
E) stone formation.

**Correct Answer** **C**

**Explanation** Non-refluxing ureterointestinal anastomoses do not prevent upper tract colonization. In one study where needle aspirations of upper urinary tracts above functioning non-refluxing anastomoses were performed, virtually all upper tract systems were colonized. Studies which have compared non-refluxing colon conduits to refluxing ileal conduits have also shown similar rates of upper tract deterioration. While a properly functioning non-refluxing ureteral anastomosis does prevent pressure transmission to the upper urinary tract this benefit is in part offset by a higher incidence of ureterointestinal stricture. This has caused some to question the benefit of creating non-refluxing anastomoses in any form of urinary diversion whether conduit or continent.

**911.** During bladder filling, intraluminal ureteral pressure:

A) increases, and the frequency of contractions increase.
B) increases, and the frequency of contractions decrease.
C) increases, and the frequency of contractions is unchanged.
D) decreases once the frequency of contractions decrease.
E) remains stable while ureteral contractions decrease.

**Correct Answer** **A**

**Explanation** As the bladder fills, resting pressure within the intravesical ureter increases. This results in an increased intraluminal (ureteral) pressure and an increase in the frequency of ureteral contractions. The end result is continued excretion of urine into the filling bladder.

**912.** A 45-year-old man with multiple bilateral renal masses and a family history of renal and cerebellar tumors is likely to have:

A) unilateral absence of the vas deferens.
B) bilateral absence of the vas deferens.
C) aplasia of the seminal vesicles.
D) epididymal cysts.
E) epididymal agenesis.

**Correct Answer** **D**

**Explanation** The patient has von Hippel-Lindau disease, which is associated with bilateral renal cysts and tumors, cerebellar hemangiomas, and epididymal cysts.

**913.** Five years after a radical cystectomy and ileal conduit for bladder cancer, a 65-year-old man has a serum creatinine of 2.5 mg/dl, BUN 40 mg/dl, sodium 146 mEq/l, potassium 4.6 mEq/l, and bicarbonate 16 mEq/l. A loopogram shows a 35 cm long moderately dilated conduit with reflux into dilated upper tracts. The most appropriate treatment is:

A) sodium bicarbonate orally.
B) balanced citrate solution orally.
C) conversion to a non-refluxing colon conduit.
D) revision of conduit length and stoma.
E) revision of ureteroileal anastomoses.

**Correct Answer** **D**

**Explanation** Despite improvement in surgical techniques, stomal stenosis is still the most likely cause of the elongated dilated conduit with hydronephrosis and hyperchloremic acidosis. Therefore, the most appropriate treatment is revision of the stoma and shortening of the conduit. Administration of electrolytes is symptomatic treatment only. Because there is no obstruction at the site of the ureteroileal anastomosis, reimplantation is not indicated. Conversion to a non-refluxing colon conduit is not required in this setting where a simpler procedure - shortening of the ileal conduit and stomal stenosis - will suffice.

**914.** The condition that leads to a decrease in circulating blood volume is:

A) reduced renal arterial pressure.
B) angiotensin II excess.
C) catecholamine excess.
D) hepatic venous congestion.
E) hyperaldosteronism.

**Correct Answer** **C**

**Explanation** Increased renin with increased aldosterone will lead to an increase in circulatory blood volume. In hepatic venous congestion, aldosterone metabolism is diminished. Adrenal cortical adenoma causes mineralocorticoid excess and increased blood volume. Of all the conditions cited, only catecholamine excess, such as one might see in a patient with pheochromocytoma, is known to be associated with a decreased blood volume. This is the reason that preoperative volume expansion is important in patients with pheochromocytoma.

**915.** A 55-year-old woman recovering from an exacerbation of her multiple sclerosis develops an acute UTI while on clean intermittent catheterization. The agent to avoid in treating this infection is:

A) trimethoprim-sulfamethoxazole.
B) nitrofurantoin.
C) cephalexin.
D) ampicillin.
E) ciprofloxacin.

**Correct Answer** **B**

**Explanation** Nitrofurantoin has been reported to cause severe and irreversible peripheral neuropathy. This may be more likely in debilitated, diabetic, or Vitamin B deficient patients. For this reason, unless there are no other drugs that can be used, nitrofurantoin should be avoided in patients who do not have static neurologic lesions. In addition, the risk of adverse reaction increases with age especially after age 50.

**916.** A 55-year-old woman undergoes a radical cystectomy and Indiana pouch. One year later, she has leakage between catheterizations, which she performs every three hours. Urodynamics reveals a pouch capacity of 200 ml and contractions to 55 cm H2O which are associated with leakage. The next step is:

A) oral oxybutinin.
B) oral metoclopramide.
C) pouch irrigations with oxybutinin.
D) pouch augmentation.
E) creation of intussucepted nipple valve.

**Correct Answer** **D**

**Explanation** The clinical scenario is of a small capacity pouch which leaks due to contractions of the pouch. This problem would be best served with an augmentation of small bowel. Reinforcement of the continence mechanism does not address the basis for incontinence. Incontinence associated with pouchitis is found in association with physical signs (tenderness over pouch, low grade fevers).

**917.** Administration of I.V. mannitol prior to renal artery occlusion for partial nephrectomy helps prevent tissue damage by:

A) increasing cellular pH.
B) preventing cellular edema.
C) inhibition of Na/K ATPase.
D) preventing lactic acidosis.
E) limiting intracellular calcium influx.

**Correct Answer** **B**

**Explanation** Renal ischemia may cause cell damage by depleting energy stores (ATP) and decreasing activity of active transport via Na%2B/K%2B and Ca%2B%2B/Mg%2B%2B ATPases. As a result, intracellular influx of Na%2B, Ca%2B%2B, Cl- and water occur. The influx of water causes cellular swelling. The use of solutions containing impermeable solutes, such as mannitol, help reduce cellular edema. Additionally, mannitol infusion results in improved renal hemodynamics and an osmotic diuresis.

**918.** During the course of a radical cystectomy, a rectal injury is primarily repaired. Three days postoperatively, the patient becomes septic. Physical examination reveals a tender surgical wound. The adjacent skin is edematous and has a bronze discoloration. Gram strain of the wound aspirate reveals gram-positive, club-shaped organisms. The next steps are surgical drainage and:

A) penicillin.
B) gentamicin.
C) fluconazole.
D) metronidazole.
E) tetracycline.

**Correct Answer** **A**

**Explanation** The findings described are characteristic of clostridial wound infection. Clostridial infections should be considered in any patient with a wound infection, especially if there has been an injury to the colon. The organism is an anaerobe with a positive gram stain and a club shape. Clinically, the patient appears very toxic and a bronze discoloration of the involved skin is very characteristic. Crepitus may be absent. High doses of intravenous penicillin would be the antibiotic treatment of choice.

**919.** A 60-year-old man is undergoing a radical cystectomy for a 3 cm invasive bladder cancer at the dome, with a planned continent neobladder diversion. At surgery the pelvic lymph nodes reveal microscopic metastatic cancer on frozen section. The next step is:

A) abort procedure; follow with systemic chemotherapy.
B) cystectomy and ileal conduit.
C) cystectomy and neobladder if apical margins are negative.
D) abort the procedure; perform an ileal conduit diversion only.
E) perform partial cystectomy and follow with chemoradiation.

**Correct Answer** **C**

**Explanation** The presence of nodal metastases is not a contraindication for continent orthotopic diversion, if that is the patient's preference. Although the majority of patients with positive nodes go on to die of their disease, most have distant rather than local recurrence, and do not develop problems with the diversion from the cancer itself.

**920.** Bicarbonate (HCO3) is reclaimed from the glomerular filtrate primarily by proximal tubular:

A) hydrogen ion secretion.
B) HCO3 - active transport.
C) sodium excretion.
D) potassium excretion.
E) water reabsorption.

**Correct Answer** **A**

**Explanation** Approximately 80%25 of filtered bicarbonate is reclaimed by the proximal tubule. Hydrogen secretion by the proximal tubule is coupled to sodium reabsorption. The secreted hydrogen ion combines with filtered bicarbonate to form H2CO3. Carbonic anhydrase then catalyzes the dehydration of luminal H2CO3 to CO2 and water. The CO2 diffuses back into the cell where it may be hydrated to form additional H2CO3. The HCO3 - generated within the cell - diffuses into peritubular blood. There is no active transport of bicarbonate in the nephron.

**921.** A 35-year-old, insulin-dependent, diabetic woman with a normal serum creatinine is treated with ampicillin for acute right pyelonephritis. Additional medications include propranolol, acetaminophen, and diazepam. On the seventh day of treatment, her temperature increases to 103 degrees Fahrenheit, and she develops a generalized pruritic skin rash. Her WBC count is 9500/cu mm with 8%25 eosinophils. Urinalysis reveals RBC casts, 3%2B proteinuria, and no bacteria. The serum creatinine is now 3.4 mg/dl. The blood sugar is 150 mg/dl. The change in this patient's clinical condition is most likely related to:

A) insulin.
B) diazepam.
C) ampicillin.
D) propranolol.
E) acetaminophen.

**Correct Answer** **C**

**Explanation** Acute interstitial nephritis due to penicillins may occur five days to five weeks after initiating the drug. Oliguria is unusual. The disease is not dose-dependent. Cross-sensitivity does exist, for example, administration of ampicillin to a patient who had developed interstitial nephritis with methicillin will precipitate a recurrence.

**922.** A 57-year-old man has high drain output seven days following radical cystectomy and orthotopic urinary diversion. His serum creatinine is 1.5 mg/dl, and his urine output remains good via his indwelling Foley catheter. The drain fluid reveals a creatinine of 1.6 mg/dl. The next step is:

A) observation.
B) replace Foley catheter.
C) suprapubic tube placement.
D) bilateral percutaneous nephrostomies.
E) exploration with repair of leak.

**Correct Answer** **A**

**Explanation** Despite the high drain output, there is no evidence of urinary leakage and the high drainage is likely due to intraperitoneal fluid. In the absence of an clinical finding suggestive of urinary leakage such as low urine output, high serum creatinine or elevated creatinine levels in the fluid, observation with conservative management is prudent. Accordingly, there is no indication for intervention in this patient at this particular time. If clinical suspicion is high despite this, a contrasted study such as a CT scan with contrast I.V. contrast, an IVP or cystogram could be obtained.

**923.** The most common acid-base disturbance that occurs in a patient with an ileal conduit urinary diversion is:

A) hyperkalemic; hyperchloremic; metabolic acidosis.
B) hyponatremic; hypochloremic; metabolic acidosis.
C) hypochloremic; hypokalemic; metabolic alkalosis.
D) hypokalemic; hyperchloremic; metabolic acidosis.
E) hyponatremic; hypochloremic; metabolic alkalosis.

**Correct Answer** **D**

**Explanation** In the setting of an ileal conduit urinary diversion, ammonium absorption occurs with chloride in exchange for hydrogen and bicarbonate ions, and may be accompanied by renal potassium wasting. This results in a hypokalemic hyperchloremic metabolic acidosis. Hyponatremic hypochloremic hyperkalemic metabolic acidosis occurs with the use of jejunum due to sodium chloride loss with increased reabsorption of potassium and hydrogen ions. Use of stomach may lead to hypochloremic hypokalemic metabolic alkalosis due to hydrogen and chloride loss with renal oversecretion of potassium to compensate for proton loss.

**924.** A 48-year-old man with genitourinary tuberculosis has a 4 cm distal ureteral stricture. He is treated with ureteral stent placement and pyrazinamide, isoniazid, and rifampin. After six weeks of treatment, no improvement in the extent or length of the ureteral stricture is noted. The next step is:

A) prednisone.
B) observation.
C) ureteroneocystostomy.
D) add streptomycin.
E) psoas hitch.

**Correct Answer** **A**

**Explanation** The most common site of ureteral stricture disease in patients with genitourinary tuberculosis is the distal ureter, occurring in approximately 9%25 of cases. Obstruction may respond to antituberculous therapy alone. However, if improvement is not noted within three weeks, prednisone (20 mg tid) should be added. If this fails, reimplantation should be considered for short strictures (< 5 cm) and either a Boari flap or psoas hitch repair for longer strictures. Endourologic management of the stricture can also be considered for shorter strictures.

**925.** A 58-year-old woman underwent cystectomy and Kock cutaneous urinary reservoir 12 years previously. She is having difficulty catheterizing and persistent urinary infections. A pouchogram shows a 4 cm stone overlying the efferent limb of the pouch, and an IVP shows normal upper tracts. The next step is:

A) SWL.
B) endoscopic lithotripsy via the stoma.
C) percutaneous endoscopic lithotripsy.
D) open stone extraction.
E) pouch irrigation with Renacidin.

**Correct Answer** **D**

**Explanation** Kock pouch stones are a common late complication, and usually form on the surgical staples used to fix the nipple valves. SWL has no place in the treatment of pouch stones. Endoscopic management, either via the stoma or a percutaneous tract, is appropriate for smaller stones, especially those that are free-floating or on the afferent limb. A stone on the efferent limb will often be stuck on staples behind the nipple valve, and may also have formed on Marlex mesh which was often used to stabilize the nipple valves. It would be very difficult to break up endoscopically. Open stone removal is very quick and effective, and can also address the underlying cause of the stone.

**926.** Duloxetine is useful for incontinence because it:

A) decreases detrusor activity.
B) increases neural activity of the intrinsic urethral sphincter.
C) increases neural activity of the external urethral sphincter.
D) increases neural activity of the external urethral sphincter and decreases detrusor activity.
E) increases neural activity of the intrinsic urethral sphincter and decreases detrusor activity.

**Correct Answer** **D**

**Explanation** Duloxetine, a combined norepinephrine and 5-HT reuptake inhibitor has been shown, in an animal model of bladder irritation to increase the neural activity of both the urethral sphincter and the bladder. Duloxetine appears to have effects on both the bladder and external sphincter and has been proposed as a treatment for both stress and urge incontinence. Duloxetine increases the neural activity to the EUS and decreases bladder activity through effects on the central nervous system.

**927.** The most common cause of catheter-associated urinary tract infection is:

A) improper catheterization technique.
B) urethral meatal bacteria.
C) break in the drainage system.
D) urinary drainage bag bacteria.
E) bacterial antimicrobial resistance.

**Correct Answer** **B**

**Explanation** Urethral meatal bacteria are the most frequent source of catheter-associated urinary tract infection. Unfortunately, topical urethral meatal antimicrobial agents do not prevent urinary tract infections and frequently cause overgrowth of resistant bacteria. Improper catheterization techniques, breaks in the system, and contamination of the drainage bag are less frequent but preventable causes of catheter-associated infection. Antimicrobials allow growth of resistant bacteria that are more difficult to treat but not more likely to cause infection.

**928.** A 54-year-old man with prostate cancer has skeletal metastases. Three months after beginning LH-RH agonist therapy, his PSA is undetectable. The likelihood of developing further bone pathology is best reduced with which of the following:

A) finasteride.
B) Vitamin E and selenium.
C) biclutamide.
D) estramustine.
E) zoledronic acid.

**Correct Answer** **E**

**Explanation** Use of bisphosphonate therapy in men with prostate cancer has demonstrated 2 outcomes: prevention of osteoporosis and reduction of skeletal-related events. Monthly intravenous zoledronic acid reduces analgesic use and the time to a skeletal event compared to placebo. However, these changes do not influence survival.

**929.** Nocturia associated with obstructive sleep apnea is caused by:

A) increased cortisol.
B) increased atrial natriuretic peptide.
C) decreased arginine vasopressin.
D) decreased angiotensin II.
E) increased antidiuretic hormone.

**Correct Answer** **B**

**Explanation** Respiratory disease associated with increased airway resistance, such as obstructive sleep apnea, is associated with increased renal sodium and water excretion mediated by plasma atrial natriuretic peptide (ANP) levels. The mechanism for elevated ANP release associated with obstructive sleep apnea is caused by increased right atrial transmural pressure resulting from hypoxia-induced pulmonary vasoconstriction. ANP release stimulates natriuresis by increased glomerular filtration rate and action on the inner medullary collecting duct. Other effects include renal blood vessel vasodilatory effects and suppression of renin secretion.

**930.** A 31-year-old woman has acute cystitis. The most appropriate treatment is three days of:

A) fosfomycin.
B) nitrofurantoin.
C) ampicillin.
D) cefazolin.
E) trimethoprim-sulfamethoxazole.

**Correct Answer** **E**

**Explanation** Practice guidelines from the Infectious Disease Society of America suggests that three days of antibiotics is optimal therapy except for nitrofurantoin which requires seven days therapy to be equal to other antibiotics. Beta-lactams are less effective in community-acquired organisms with resistance as significant as 50%25 in some communities. Acute uncomplicated bacterial cystitis in healthy adult non-pregnant women is best approached with TMP-SMX since approximately 80%25 of E. coli are sensitive to this regimen. Oral fluoroquinolones may also be used for three days. Fosfomycin (Monurol) is a single dose therapy.

**931.** A 64-year-old man has persistent cutaneous urinary drainage of 300-400 ml per day four weeks following cystectomy and ileal conduit. An IVP shows urinary extravasation at the site of the right ureteroileal anastomosis. The best management is:

A) revision of ureteroileal anastomosis.
B) percutaneous placement of a nephroureteroileal stent.
C) catheter drainage of the conduit.
D) looposcopy and retrograde stent placement.
E) observation.

**Correct Answer** **B**

**Explanation** If possible, a percutaneous nephrostomy with placement of a stent across the fistula is the best management, since a percutaneous nephrostomy alone will not usually divert the urine completely. If this is not possible, exploration and operative repair may be necessary. Looposcopy might further disrupt the anastomosis and chances of passing a stent retrograde are slim.

**932.** A 36-year-old woman with cerebral palsy develops urgency incontinence with severe perineal skin ulceration. Urodynamics show a 200 cc capacity bladder with uninhibited contractions. Abdominal leak point pressure is 110 cm water. She has failed anticholinergics. Due to her body habitus, clean intermittent catheterization is not possible. The best management is:

A) detrusor myomectomy.
B) ileal conduit.
C) Indiana pouch.
D) bladder augmentation with catheterizable abdominal stoma.
E) bladder augmentation with fascial sling.

**Correct Answer** **D**

**Explanation** Bladder augmentation represents the best solution to this complex problem; however, this can commit the patient to clean intermittent catheterization. This is not possible for this patient. In selected circumstances such as this, a continent catheterizable abdominal stoma is a useful option. The urethral sphincter is intact in this patient as evidenced by a very high abdominal leak pressure.

**933.** Which drug may result in a false positive screening test for urinary opiates:

A) ampicillin.
B) cephalexin.
C) trimethoprim.
D) levofloxacin.
E) nitrofurantoin.

**Correct Answer** **D**

**Explanation** Urinary drug screening is now routinely performed in a number of settings. It is important to recognize that certain types of antibiotic therapy may result in false positive urinary opiate testing. Several types of quinolone agents including levofloxacin, ofloxacin, ciprofloxacin, norfloxacin, trovafloxacin, enoxacin, and nalidixic acid have this property. Rifampin therapy and poppy seed ingestion have also been reported to result in false positive urinary opiate testing.

**934.** A 33-year-old woman develops gross hematuria requiring multiple transfusions four weeks after a percutaneous nephrolithotomy. The next step is:

A) observation.
B) renal arteriogram.
C) CT scan.
D) exploration and repair.
E) nephrectomy.

**Correct Answer** **B**

**Explanation** The most likely diagnosis is an AV fistula or a false aneurysm. Renal arteriography should be performed and an embolization procedure can be undertaken if one of the aforementioned lesions are identified.

**935.** During a Burch colposuspension, lateral suture placement into Cooper's ligament may injure the:

A) femoral nerve.
B) femoral artery.
C) femoral vein.
D) obturator nerve.
E) pudendal nerve.

**Correct Answer** **C**

**Explanation** Burch colposuspension is a relatively durable procedure for correction of incontinence secondary to urethral hypermobility. The potential complications of this procedure include opening the bladder neck causing worsening of incontinence, placement of vaginal suture distal to the bladder neck causing urethral kinking with obstruction, and creation of an enterocele. In addition, superior placement of sutures can result in a kinking of ureters causing bilateral ureteral obstruction. One major risk can occur during placement of the lateral sutures into Cooper's ligament, injuring the femoral vein. This is managed by compression and then tying the suture.

**936.** A 22-year-old woman with recurrent febrile E. coli UTIs wants to become pregnant. IVP shows a normal left kidney and an atrophic, scarred right kidney with less than 5%25 function on a DMSA scan. VCUG shows no reflux. The next step is:

A) indium-labeled WBC scan.
B) preventive antimicrobial therapy.
C) bilateral ureteral catheterization with cultures.
D) fluorescent bacterial antibody testing.
E) right nephrectomy.

**Correct Answer** **C**

**Explanation** It must be decided whether this woman has recurrent E. coli infections or a persistent source of infection. One of the causes of surgically correctable bacterial persistence in the urinary tract is a unilateral infected atrophic kidney. To prove that this woman has bacterial persistence, however, upper tract bacterial localization cultures with bilateral ureteral catheterization need to be performed before nephrectomy is considered to treat her infections. If the kidney is not infected, these infections are the result of frequent E. coli reinfections in which case a right nephrectomy would not be helpful in treating her.

**937.** A 67-year-old man has a rectoprostatic fistula one year after interstitial and external beam radiation for localized prostatic cancer. An initial fulguration failed and three months ago, he had a proximal colostomy. He continues to have urine leakage per rectum and recurrent urinary infections. Biopsy of the prostate shows no cancer and serum PSA is 0.3 ng/ml. The best treatment is:

A) suprapubic cystotomy.
B) transabdominal repair.
C) urinary diversion.
D) salvage prostatectomy.
E) posterior transanal repair (York-Mason) approach

**Correct Answer** **E**

**Explanation** A prostatorectal fistula is relatively low in the pelvis and is best managed by the posterior-transanal repair (York-Mason) approach, in which the posterior anal sphincter is split to provide good exposure of the anterior rectal wall. The fistula site can then be excised with a multilayer closure. A transabdominal repair is difficult in this setting due the location deep within the pelvis, and this type of fistula is better repaired through the posterior, transanal approach. A urinary diversion may need to be considered, but only if attempts for primary repair have failed. This patient's PSA is <0.5 and he is likely to stay cancer free, so salvage prostatectomy should not be considered.

**938.** Trimethoprim, nitrofurantoin, and cephalexin are effective for the prevention of frequent urinary reinfections in adult women when administered in chronic low dosage because each is:

A) concentrated in the urine.
B) concentrated in the vaginal fluid.
C) completely absorbed in the upper gastrointestinal tract.
D) capable of reducing fecal uropathogens.
E) associated with no significant side effects during long term administration.

**Correct Answer** **A**

**Explanation** Each of the three agents is concentrated in the urine so that efficacy is maintained despite dose-administration reductions. Only trimethoprim is concentrated in the vaginal fluid, and trimethoprim is not completely absorbed in the upper gastrointestinal tract. Only trimethoprim reduces the mass of urinary pathogens in the fecal flora. Nitrofurantoin is associated with the long-term side effect of pulmonary fibrosis.

**939.** A 70-year-old neurologically normal woman has random, large volume urinary incontinence. Medical history is significant for a hysterectomy 20 years ago. Urinalysis is normal and postvoid residual is 40 ml. The filling CMG is shown (see figure). No urinary leakage is noted with Valsalva maneuver. The most likely cause of her incontinence is:

A) overflow.
B) detrusor instability.
C) detrusor hyperactivity with impaired contractility.
D) intrinsic sphincter deficiency.
E) vesicovaginal fistula.

**Correct Answer** **B**

**Explanation** This patient has urgency incontinence secondary to detrusor instability, as indicated by the random nature of the incontinence. A cystometrogram will fail to demonstrate involuntary bladder contractions in approximately 50%25 of patients with clinical urgency incontinence. Detrusor hyperreflexia implies the presence of involuntary bladder contractions in the face of neurological disease. This patient is neurologically normal therefore detrusor hyperreflexia is not the cause of her incontinence. Overflow incontinence is not the cause in this case as the post-void residual is low. The primary cause of the incontinence is not stress (increase in abdominal pressure) related, particularly not intrinsic sphincter deficiency, since urinary leakage did not occur during Valsalva maneuvers. The characteristics of the incontinence are not consistent with a vesicovaginal fistula since the urinary leakage is not continuous.

**940.** A 65-year-old woman has vaginal leakage of urine three years after radiation for cervical carcinoma. IVP reveals normal upper urinary tracts, and a methylene blue test confirms the presence of a vesicovaginal fistula. The next step is:

A) suprapubic tube.
B) fulguration of fistula.
C) biopsy of fistula.
D) vaginal repair with labial fat flap.
E) transabdominal repair with omental flap.

**Correct Answer** **C**

**Explanation** Recurrent carcinoma should be suspected in any patient with delayed vesicovaginal fistula formation, even with prior radiation therapy, following management of a pelvic malignancy. CT scan or MRI scan may detect massive pelvic disease but biopsy of the fistula tract is mandatory to rule out carcinoma as the primary cause of the fistula.

**941.** A patient has stress urinary incontinence one year after radical retropubic prostatectomy. However, stress incontinence observed on physical examination is not documented during an abdominal leak point pressure determination under fluoroscopy. The test was performed using a 12 Fr urethral catheter at a volume of 200 cc. The most likely explanation for the false negative leak point pressure is:

A) insufficient volume instilled.
B) urethral catheter is too large.
C) involuntary bladder contraction.
D) poor valsalva effort.
E) impaired contractility.

**Correct Answer** **B**

**Explanation** With a stricture of the urethra or a bladder neck contracture using a catheter as small as 9 Fr may not allow urine to exit around its diameter. Using a rectal pressure as an estimate of intra-abdominal pressure or use of a suprapubic catheter represent alternative methods. More simply, a smaller diameter catheter such as 7 Fr or less can be used.

**942.** A 33-year-old man has active genitourinary tuberculosis. His community has a 12% 25 incidence of INH-resistant Mycobacterium. The best initial treatment is INH and:

A) rifampin.

B) rifampin, pyrazinamide.

C) rifampin, pyrazinamide, ethambutol.

D) rifampin, streptomycin.

E) pyrazinamide, streptomycin.

**Correct Answer** **C**

**Explanation** The best initial treatment of GU TB is triple drug treatment for two months followed by two drugs for four months. The best combination is INH, rifampin, and pyrazinamide. If the INH resistance is above 4%25 in the patient's community, addition of ethambutol or streptomycin to the three drugs is advised.

**943.** A 14-year-old boy involved in an MVA has an injury to the conus medullaris. His neurologic examination will reveal:

A)

B) <br><tab>Bulbocavernosus<tab>Deep tendon<tab>Skin sensation<br><tab>reflex<tab><tab>reflexes<tab><tab>of genitalia

C) <tab>absent<tab><tab>increased<tab><tab>absent.

D) <tab>absent<tab><tab>absent<tab><tab>absent.

E) <tab>absent<tab><tab>absent<tab><tab>normal.

**Correct Answer** **<tab>present<tab><tab>increased<tab><ta b>normal.**

**Explanation** <tab>present<tab><tab>absent<tab><tab>absent.

**944.** An 81-year-old woman with nocturnal enuresis is treated with DDAVP (desmopressin). After ten days of treatment, she develops mental confusion and subsequently has a seizure. The next step is:

A) serum desmopressin level.
B) serum potassium.
C) serum sodium.
D) head CT scan.
E) lumbar puncture.

**Correct Answer** **C**

**Explanation** The most common severe side effect associated with the use of DDAVP is water intoxication and hyponatremia. This can lead to mental status changes and seizures. This condition is best detected by measurement of serum electrolytes, particularly sodium. Although a head CT and lumbar puncture are generally useful to evaluate symptoms of mental confusion and seizures, a history of DDAVP use and concomitant hyponatremia would preclude the need for these tests.

**945.** A 28-year-old woman with asymptomatic bacteriuria is 27 weeks pregnant. A urine culture is positive for E. coli. The most frequent complication of failure to treat bacteriuria is:

A) acute renal failure.
B) premature birth.
C) perinephric abscess.
D) eclampsia of pregnancy.
E) spontaneous abortion.

**Correct Answer** **B**

**Explanation** Asymptomatic bacteria occurs in 4-7%25 of women of childbearing age irrespective of pregnancy. The prevalence of bacteriuria increases with parity, age, and lower socio-economic status. Bacteriuria occurs in the first prenatal visit in approximately 75%25 of women who develop infection during pregnancy. The majority of these infections (75%25) occur in the first trimester. 20-40%25 of patients with bacteriuria early in pregnancy will develop pyelonephritis if untreated and this continued asymptomatic bacteriuria results in premature birth and low birth weight. Quantitative urine cultures must be obtained in all patients at the initial prenatal visit.

**946.** Non-neurogenic neurogenic bladder is characterized by:

A) high intravesical pressure with poor compliance.
B) detrusor areflexia with detrusor internal sphincter dyssynergia.
C) detrusor areflexia and low urethral closing pressure.
D) uninhibited contractions with detrusor external sphincter dyssynergia.
E) uninhibited contractions with detrusor internal sphincter dyssynergia.

**Correct Answer** **D**

**Explanation** Hinman's review of non-neurogenic neurogenic bladder indicates that this entity is an acquired abnormality developing at the time the child learns voiding control. The inability to relax the urethral sphincter in conjunction with elevated intravesical pressures results in an obstructive pattern with all of its adverse affects on renal structure and function.

**947.** Anticholinergic agents for bladder overactivity would most likely exacerbate which of the following:

A) narrow-angle glaucoma.
B) ulcerative colitis.
C) asthma.
D) myasthenia gravis.
E) hyperhydrosis.

**Correct Answer** **A**

**Explanation** Antimuscarinic agents are contraindicated in patients with narrow-angle glaucoma. The medication may exacerbate the impeded drainage of aqueous humor from the anterior chamber of the eye increasing intraocular pressure, which heightens the risk of vision loss.

**948.** A 69-year-old man with newly diagnosed Stage D2 prostate cancer develops significant back discomfort in the L 3-4 area which is a site of known metastases. The quickest method to pharmacologically establish a castrate state is:

A) megestrol acetate.
B) GnRH agonist plus flutamide.
C) ketoconazole.
D) DES.
E) suramin.

**Correct Answer** **C**

**Explanation** Within 48 hours, ketoconazole will lower the serum testosterone into the castrate zone. Flutamide, DES, and suramin do not result in a rapid hormonal blockade. GnRH agonists are contraindicated in this patient due to their initial "flare" effect; also with these agents, castrate levels are not reached for a two-week period.

**949.** While performing a videourodynamic study in a three-year-old child, the recommended rate of bladder filling is:

A) 10 ml/min.
B) 20 ml/min.
C) 30 ml/min.
D) 40 ml/min.
E) 50 ml/min.

**Correct Answer** **A**

**Explanation** The rate of bladder filling (ml/min) is calculated by determining the child's predicted bladder capacity (average bladder capacity in ml = age in years %2B 2 X 30) and dividing the result by 10. In this case, (3%2B2) X 30 = 150/10 = 15 ml/min or less. It is important not to fill the bladder too fast as it may result in falsely low levels of detrusor compliance and may produce artifactual detrusor contractions. Filling at 10 percent per minute of the calculated bladder capacity (or less) avoids these problems.

**950.** A 68-year-old man on testosterone replacement for hypogonadism has lower extremity deep venous thrombosis, splenomegaly and a hematocrit of 54. His PSA is 7.5. The most appropriate treatment is to discontinue testosterone, start anticoagulation and:

A) phlebotomize.
B) leuprolide.
C) bicalutamide.
D) perform bone marrow biopsy.
E) perform splenectomy.

**Correct Answer** **A**

**Explanation** This patient has significant erthryocytosis (similar to polycythemia vera) caused by testosterone stimulation. The best treatment is immediate phlebotomy with later reduction of testosterone dose. The elevated PSA warrants evaluation, but not urgently.

**951.** Stress-related cortisol production comes from the:

A) zona glomerulosa.
B) zona fasciculata.
C) zona reticularis.
D) entire adrenal cortex.
E) adrenal medulla.

**Correct Answer** **B**

**Explanation** The zona fasciculata is responsible for cortisol production, the zona glomerulosa for mineralocorticoid production, and the zona reticularis for androgen and estrogen production. The adrenal medulla secretes catecholamines.

**952.** An eight-year-old boy with acute lymphocytic leukemia undergoes chemotherapy. His urine output during the last 24 hours is 50 cc. Serum creatinine is 2.1 mg/dl, BUN 40 mg/dl, and uric acid 8.5 mg/dl. Renal ultrasound demonstrates normal sized kidneys with no hydronephrosis and increased echogenicity. The next step is:

A) isotope renogram.
B) renal biopsy.
C) retrograde pyelography.
D) allopurinol.
E) hydration and urinary alkalinization.

**Correct Answer** **E**

**Explanation** The patient has tumor lysis syndrome and early acute oliguric renal failure secondary to uric acid nephropathy. The normal ultrasound without hydronephrosis rules out obstruction as the cause of the renal failure. Initial management is hydration, urinary alkalinization and reduction of uric acid with allopurinol. If that fails, hemodialysis may be necessary. The IVP should be avoided due to contrast exposure. Renal biopsy, to rule out interstitial tumor infiltration, is not indicated. The patient is not obstructed and cystoscopy with stent placement is not indicated.

**953.** A man with impotence secondary to hyperprolactinemia from a small pituitary adenoma does not improve on oral bromocriptine treatment despite normalization of the serum prolactin level. The next step is:

A) CT scan of the sella turcica.
B) parenteral bromocriptine.
C) serum testosterone level.
D) pituitary surgery.
E) parenteral dopamine.

**Correct Answer** **C**

**Explanation** Prolactin secretion by the pituitary is under tonic inhibition by the hypothalamic prolactin inhibitory factor, dopamine. Hyperprolactinemia can cause declining libido and impotence. Most hyperprolactinemic men have had large pituitary tumors and hypopituitarism. In patients with small pituitary lesions, bromocriptine treatment alone will normalize serum prolactin levels and allow for spontaneous return of normal testosterone secretion sufficient for restoration of libido and potency in most patients. In many patients with pituitary adenomas, however, serum testosterone secretion did not return to normal with bromocriptine alone and serum testosterone levels remained subnormal. This group of patients will require, in addition to bromocriptine, parenteral testosterone to normalize libido fully and restore potency.

**954.** Hemorrhage during bilateral total adrenalectomy is more likely to occur on the:

A) left because of multiple veins.
B) right because of multiple veins.
C) left because the main adrenal vein joins the left renal vein.
D) right because the short adrenal vein enters directly into the vena cava.
E) left because of the proximity of the spleen.

**Correct Answer** **D**

**Explanation** One major vein drains each adrenal gland. The left adrenal vein enters the renal vein, whereas the right adrenal vein enters directly into the vena cava. The right adrenal vein is short, as well.

**955.** Which of the following suggest an increased risk of genitourinary abnormality in the neonate:

A) newborn serum creatinine of 1.2 mg/dl.
B) maternal insulin-dependent diabetes.
C) maternal hypertension.
D) no urine from infant in first 20 hours.
E) maternal history of multicystic kidney.

**Correct Answer** **B**

**Explanation** The neonatal serum creatinine of 1.2 reflects maternal creatinine and is not a matter of concern. Maternal diabetes mellitus (insulin-dependent) poses an increased risk for sacral agenesis and bladder dysfunction in the infant. Maternal hypertension is associated with some risk of renal vein thrombosis. Some boys do not pass urine in the first 24 hours. At 20 hours, no studies are indicated in the absence of other problems. Multicystic kidney is congenital, but not hereditary.

**956.** A 45-year-old man with a history of hypertension and significant tobacco abuse is impotent one year following a crush injury to the pelvis. A penile arteriogram reveals unilateral focal occlusion of the internal pudendal artery. Treatment should be:

A) intracavernous vasoactive injections.
B) dorsal venous ligation.
C) percutaneous angioplasty.
D) arterial revascularization.
E) penile prosthesis.

**Correct Answer** **A**

**Explanation** Percutaneous or surgical revascularization of the internal pudendal arteries is not indicated owing to the patient's age and associated atherosclerotic vascular disease secondary to smoking. There is no indication for venous ligation. Owing to the vascular disease, penile injections may not be successful but should be implemented prior to insertion of a penile prosthesis.

**957.** A 71-year-old man with a history of aortoiliac reconstruction has left flank pain. A noncontrast CT scan reveals obstruction of the left ureter at the pelvic brim. The most likely cause of the obstruction is:

A) compression from an anteriorly placed graft.
B) pseudoaneurysm formation.
C) retroperitoneal fibrosis.
D) ligation of the ureter.
E) ischemia of the ureter.

**Correct Answer** **C**

**Explanation** Ureteral obstruction is a recognized complication of reconstructive vascular procedures. The incidence of mild or moderate permanent ureteral obstruction is 2 to 14 percent of patients and of temporary and asymptomatic hydronephrosis is 12 to 30 percent. Most patients present within one year following the procedure, but delays up to 14 years have been reported. Retroperitoneal fibrosis secondary to the surgical procedure is the most common cause of ureteral obstruction. It is likely secondary to bleeding or excessive dissection with resultant fibrosis. The other choices are all causes of obstruction, but not the most common.

**958.** A 15-year-old boy has hypertension associated with a solitary kidney and renal artery stenosis. His hypertension is most likely characterized by:

A)
B) <br><tab><tab><tab><tab>BP Response to <br><tab>Plasma Renin Activity<tab>Angiotensin II Antagonists
C) <tab><tab>â†‘<tab><tab>â†”
D) <tab><tab>â†‘<tab><tab>â†“
E) <tab><tab>â†‘<tab><tab>â†‘

**Correct Answer** **<tab><tab>â†“<tab><tab>â†”**

**Explanation** <tab><tab>â†“<tab><tab>â†“

**959.** A 30-year-old man with a recent diagnosis of end-stage renal disease due to membranous glomerulonephritis develops impotence. The best long-term management of his impotence is:

A) testosterone.
B) vacuum erection device.
C) renal transplantation.
D) sildenafil.
E) intracavernous injections.

**Correct Answer** **C**

**Explanation** The etiology of impotence is most likely uremia. Vascular insufficiency is unlikely. A significant number of male dialysis patients are impotent. Approximately 80%25 of young healthy men regain potency following transplantation.

**960.** A 26-year-old woman has persistent mild left flank discomfort six months after a percutaneous endopyelotomy for severe hydronephrosis from a ureteropelvic junction obstruction. Ultrasound reveals the hydronephrosis is unchanged and a diuretic renogram reveals a T1/2 of 27 minutes. Optimal treatment is:

A) observation.
B) repeat percutaneous endopyelotomy.
C) retrograde endopyelotomy.
D) pyeloplasty.
E) chronic ureteral stent.

**Correct Answer** **D**

**Explanation** This patient has failed endopyelotomy, both on ultrasound and by virtue of renal scan results. This is not surprising as a patient with severe hydronephrosis has as high as a 50%25 risk of failure compared to a 4%25 risk in patients with moderate hydronephrosis. Optimal therapy for these patients who have failed endopyelotomy with severe hydronephrosis is open or laparoscopic pyeloplasty.

**961.** A nine-year-old boy has intermittent gross, painless hematuria. Urinalysis is normal except for numerous red cells without casts. Urine culture and sonogram are negative. A percutaneous renal biopsy shows segmental glomerulonephritis with immunoglobulin deposition in mesangial areas. The diagnosis is:

A) Alport's syndrome.
B) Henoch-SchÃ¶nlein purpura.
C) membranous glomerulonephritis.
D) IgA nephropathy.
E) hemolytic uremic syndrome.

**Correct Answer** **D**

**Explanation** One of the most frequent causes of intermittent gross hematuria in children is Berger's disease or IgA nephropathy. While the disease may be more benign in children, occasional cases will progress to renal failure, making its recognition important. These patients should be followed with serum creatinine and 24-hour urine for creatinine and protein. If these indicate mild and stable disease, biopsy is not required.

**962.** Compared to primary penile prosthesis insertion, prosthesis revision is associated with an increased risk of:

A) infection.
B) mechanical failure.
C) erosion.
D) persistent penile pain.
E) hemorrhage.

**Correct Answer** **A**

**Explanation** A recent study has shown that there is a dramatic increase in infection following revision of penile prostheses.

**963.** An 18-year-old boy has a 1.5 cm urethral stricture several years following a straddle injury. The best treatment is:

A) urethral dilation.
B) visual internal urethrotomy.
C) visual internal urethrotomy with mesh stent.
D) primary urethral anastomosis.
E) patch flap urethroplasty.

**Correct Answer** **D**

**Explanation** Primary urethral anastomosis is the most likely single operation to result in permanent correction. Urethral dilation and visual internal urethrotomy have a high recurrence rate. Patch flap urethroplasty is a reasonable alternative, especially if the stricture is longer. A urethral stent has little place in a young man with a first stricture.

**964.** An eight-year-old, 25 kg boy with pyelonephritis has vomiting and diarrhea for three days. Serum electrolytes are: Na 150 mEq/l, K 3.0 mEq/l, Cl 117 mEq/l, HCO3 25 mEq/l. The most appropriate intravenous therapy for the first 24 hours is:

A) 0.25 NS with 40 mEq/l of KCl at 100 cc/hr.
B) D5W with 40 mEq/l of KCl at 200 cc/hr.
C) NS with 40 mEq/l of KCl at 100 cc/hr.
D) NS with 40 mEq/l of KCl at 75 cc/hr.
E) D5W with 10 mEq/l of KCl at 200 cc/hr.

**Correct Answer** **A**

**Explanation** The child has significant hypernatremia and hypokalemia. Most cases of hypernatremia are due to loss of water or failure to adequately replace water loss. In this case, water loss is due to diarrhea and vomiting. These extrarenal water losses are associated with a decrease in extracellular fluid volume indicating deficits in total body sodium as well as water. The proportionally greater deficiency of water than of sodium leads to the increase in the serum sodium concentration. Initial fluid replacement in this child should replace the water loss and salt losses with a hypotonic salt solution (0.25NS with 40 mEq/l KCl at 100 cc/hr) at a rate 1.5-2.0x maintenance.

**965.** Hypoactive sexual desire disorder in postmenopausal women is best treated with:

A) estrogens.
B) testosterone.
C) testosterone and estrogen.
D) dehydroepiandosterone (DHEA).
E) sildenafil.

**Correct Answer** **C**

**Explanation** In a prospective, two year, single-blinded, randomized trial of 34 postmenopausal women, combined estrogen and testosterone therapy led to a greater improvement in multiple measures of sexuality than just estrogen therapy alone.

**966.** A 20-year-old man sustains a circumferential avulsion of the skin of the mid-shaft of the penis. There is intact skin on both the proximal and distal aspects of the penile shaft, with a denuded area 4 cm in length. The most appropriate treatment is:

A) primary approximation of the skin.
B) split thickness skin graft to the denuded area.
C) split thickness skin graft and removal of distal penile skin.
D) full thickness skin graft to the denuded area.
E) scrotal rotational flap covering the denuded area.

**Correct Answer** **C**

**Explanation** A 4 cm gap, if covered by simple approximation, will result in recession of the penis into the scrotum. A scrotal rotational flap will cover the penile skin with hairy, rugous skin and will be cosmetically displeasing. Therefore, a split thickness skin graft should be used. The distal skin should be removed. If it is not removed, the interposed split thickness graft will cause obstruction of the normal lymphatic drainage of this distal skin and lymphedema will result. There is no reason to remove the proximal skin.

**967.** Stabilization of the myocardium during life-threatening hyperkalemia associated with loss of P waves and widening of the QRS complex on the electrocardiogram is best accomplished using:

A) calcium gluconate intravenously.
B) NaHCO3 intravenously.
C) 10%25 glucose with regular insulin.
D) potassium exchange resin with sorbitol.
E) hemodialysis.

**Correct Answer** **A**

**Explanation** Severe hyperkalemic cardiotoxicity must be treated immediately, not by lowering serum potassium concentration alone but preventing cardiac excitability and antagonizing the cardiotoxic effects of hyperkalemia. Thus, intravenous calcium gluconate is the treatment of choice. This must be followed by measures to immediately lower serum potassium since the duration of calcium effects are brief. Bicarbonate and glucose should be given next, but they are short-acting and exchange resins/dialysis should be planned for more long-term treatment.

**968.** The organism most frequently associated with penile prosthetic infections is:

A) E. coli.
B) Staphylococcus epidermidis.
C) Staphylococcus aureus.
D) Enterococcus faecalis.
E) group B streptococcus.

**Correct Answer** **B**

**Explanation** Greater than 90%25 of penile prosthetic infections are caused by staphylococcus epidermidis.

**969.** A 45-year-old woman has right flank pain. CT scan shows a right perirenal hematoma. The most likely underlying cause is:

A) renal adenocarcinoma.
B) renal angiomyolipoma.
C) renal artery aneurysm.
D) polyarteritis nodosa.
E) complex renal cyst.

**Correct Answer** **A**

**Explanation** The most common cause of retroperitoneal hemorrhage is rupture of an abdominal aortic aneurysm. Renal and adrenal diseases account for the majority of cases other than those due to aortic aneurysms. Renal adenocarcinomas account for the majority of these latter cases. Although both malignant and benign tumors may rupture, renal adenocarcinomas account for the majority of such cases, due to the higher incidence of such tumors compared to benign lesions (angiomyolipomas).

**970.** An oliguric patient has a spot urine sodium of 8 mEq/l. The condition most consistent with this laboratory finding is:

A) prerenal azotemia.
B) acute tubular necrosis.
C) chronic pyelonephritis.
D) renal tubular acidosis.
E) acute urinary obstruction.

**Correct Answer** **A**

**Explanation** Urine volume is the difference between GFR and amount of water resorbed. If a normal adult has a GFR of 180 liters/day then 179 liters must be reabsorbed to have a urine volume of one liter. Anuria is described as urine volume that is virtually nil, i. e., less than 50 ml/day. Oliguria is substantially reduced urine volume (less than 30 ml/hour). Urine sodium concentration is usually below 25 mEq/l in volume depletion and above 40 mEq/l with normovolemia or acute tubular necrosis. A urinary sodium of only 8 mEq/l is most suggestive of prerenal azotemia.

**971.** In men with multiple sclerosis, the urodynamic finding that predicts upper tract deterioration is:

A) detrusor hyperreflexia.
B) impaired contractility.
C) elevated voiding pressure.
D) detrusor areflexia.
E) detrusor-striated sphincter dyssynergia.

**Correct Answer** **E**

**Explanation** Men with multiple sclerosis and detrusor-striated sphincter dyssynergia are at significant risk to develop upper urinary tract abnormalities. Besides detrusor-striated sphincter dyssynergia in men, sustained intravesical pressures greater than 40 cm of water rather than just elevated voiding pressures is also a significant risk factor. Although all of the other answers may be seen in men with voiding symptoms and multiple sclerosis, their presence is not as significant as the initial findings of detrusor-striated sphincter dyssynergia.

**972.** A 35-year-old woman has severe pain at the right lower quadrant trocar site three days after a right laparoscopic pyeloplasty. She has a low grade fever, normal bowel sounds, mild abdominal distension with tenderness at the trocar site, and a WBC of 2,900/cu mm. The most likely diagnosis is:

A) port site hernia.
B) port site infection.
C) urinoma.
D) intraperitoneal bleed.
E) bowel injury.

**Correct Answer** **E**

**Explanation** Bowel injury associated with laparoscopic surgery is a rare complication. The presentation is unusual and consists of severe pain at the trocar site nearest the injury, abdominal distension and leukopenia. Peritoneal signs and ileus are distinctly absent and the painful trocar site appears remarkably normal. Based on these findings, a CT scan should be obtained at the first suspicion, and immediate repair is mandatory. Failure to recognize a bowel injury may result in rapid cardiovascular collapse and death.

**973.** A 30-year-old man with diabetes insipidus has been NPO for 16 hours. He becomes confused, lethargic, and hyperreflexic. The initial fluids given should be:

A) lactated Ringers.
B) D5W.
C) D5W/.2NS.
D) D5W/.45NS.
E) 3%25 saline.

**Correct Answer** **A**

**Explanation** This patient has symptoms characteristic of hypovolemic hypernatremia. It is essential to first restore plasma volume with lactated Ringers. The hypernatremia should then be lowered slowly, no more than 10 mEq per day to prevent intracranial swelling and fatal complications.

**974.** In a paraplegic man with a T-12 spinal cord transection, the major complication of external urethral sphincterotomy is:

A) significant hemorrhage.
B) acute urinary tract sepsis.
C) priapism.
D) impotence.
E) autonomic dysreflexia.

**Correct Answer** **A**

**Explanation** Significant hemorrhage is the major complication to be anticipated in the performance of an external sphincterotomy. Autonomic dysreflexia would not be anticipated to be a major problem because of the level of the lesion. Autonomic dysreflexia is seen with high spinal cord lesions which occur above the level of the sympathetic outflow tract. With appropriate antibiotic coverage, acute urinary tract sepsis is usually not a major problem. Likewise, priapism or impotence are rarely if ever encountered during the performance of this operative procedure.

**975.** A 23-year-old man notes a cracking noise and subsequent penile pain during intercourse, followed by progressive penile swelling and ecchymosis. He is initially embarrassed to seek medical attention despite the persistent penile pain. Thirty-six hours after the traumatic event, he is afebrile with stable vital signs. A retrograde urethrogram is normal. The next step is:

A) reassurance and cold compresses.
B) cavernosal-spongiosal shunt.
C) surgical exploration.
D) Foley catheter splinting.
E) corporeal aspiration and Foley catheter drainage.

**Correct Answer** **C**

**Explanation** Delayed presentation after penile fracture should not change ones management that requires prompt surgical exploration with evacuation of the hematoma and repair of the tunica albuginea. A retrograde urethrogram should be performed prior to surgical exploration. There does not appear to be altered sexual function or penile curvature despite the delayed presentation and repair.

**976.** A 4 kg, seven-day-old boy undergoes a left nephrectomy. The blood loss is 40 ml. Two hours postoperatively, the BP is 70/40 mm Hg, pulse rate is 125, and hemoglobin is 11.0 g. He has made 8 cc of urine since surgery. The most appropriate management is:

A) transfuse 10 ml/kg PRBCs.
B) give 10 ml/kg 5%25 albumin.
C) bolus with 100 ml Ringer's lactate.
D) place a central venous catheter.
E) continue maintenance fluids.

**Correct Answer** **E**

**Explanation** The vital signs in this infant are normal for age as is the hemoglobin. No specific intervention is necessary as the urine output is an acceptable 0.5 cc/hr.

**977.** A 55-year-old man has urinary retention after abdominoperineal resection for carcinoma. By the third postoperative week, he is voiding small amounts with diurnal incontinence. He has a residual of 300 ml. Prior to the surgical procedure, he had an enlarged prostate on rectal examination and mild LUTS. The next step is:

A) cystoscopy.
B) urodynamics.
C) clean intermittent catheterization.
D) TURP.
E) bethanechol.

**Correct Answer** **C**

**Explanation** This patient has a bladder neural injury which may recover, so intermittent catheterization is the treatment of choice. Bethanechol will not help. A TURP is premature, may cause permanent incontinence, and in any case, will not help generate a detrusor contraction. Cystoscopy and urodynamics may show a large prostate and signs of obstruction, but will not impact management at this time.

**978.** The chemotherapeutic agent most likely to be associated with increased toxicity because of reabsorption from an ileal neobladder is:

A) methotrexate.
B) gemcitabine.
C) vincristine.
D) doxorubicin.
E) cisplatinum.

**Correct Answer** **A**

**Explanation** Toxic metabolic effects secondary to drug reabsorption of methotrexate from intestinal mucosa used in urinary tract reconstruction can occur. Vigorous hydration, alkalinization of the urine, and catheter drainage can prevent this complication. The other agents given do not display a significantly increased toxicity because of intestinal reabsorption. Methotrexate is the smallest molecule of those listed, and therefore most likely to be absorbed.

**979.** A four-year-old boy with posterior urethral valves has a vesicostomy. Serum creatinine is 0.6 mg/dl. Ultrasound shows minimal hydronephrosis. Videourodynamics show a bladder capacity of 30 cc with a pressure of 14 cm H2O when leakage occurs from the vesicostomy with no reflux. Undiversion is considered. The best management is resection of the posterior urethral valves and:

A) ileal augmentation cystoplasty.
B) ileal augmentation with appendicovesicostomy.
C) bladder cycling via the vesicostomy.
D) primary closure of the vesicostomy.
E) autoaugmentation cystoplasty.

**Correct Answer** **D**

**Explanation** Approximately 75%25 of children will have normal bladder function after a period of defunctionalization. The need for bladder augmentation is more related to the effects of the primary pathological condition on the detrusor than the diversion itself. Augmentation cystoplasty is rarely needed after undiversion in patients with posterior urethral valves.

**980.** A unique pharmacological property of imipramine compared to oxybutynin is:

A) alpha-blocker effect.
B) muscarinic subtype selectivity.
C) antispasmodic effect.
D) anesthetic-like activity.
E) anticholinergic activity.

**Correct Answer** **D**

**Explanation** Imipramine has a strong direct inhibitory effect on bladder smooth muscle (neither anticholinergic nor adrenergic) which is probably the result of local anesthetic-like action at nerve terminals in adjacent effector membranes, or inhibition of calcium in the excitation-contraction coupling process. Imipramine also has an alpha-agonist effect, and also inhibits serotonin reuptake.

**981.** A 55-year-old woman has Grade II, Stage T1 transitional cell carcinoma of the bladder. The abnormality most likely to predict progression to invasive disease is:

A) 17p chromosomal deletion.
B) 17q chromosomal deletion.
C) increased p53 immunostaining.
D) decreased p53 immunostaining.
E) c ERB 2 overexpression.

**Correct Answer** **C**

**Explanation** Deletion of 17p is common in invasive tumors but rarely is observed in superficial cancer, except for carcinoma in situ. The proposed site of the p53 tumor suppressor gene is 17p. The p53 tumor suppressor gene is more often associated with invasive bladder cancer than with superficial cancer. Superficial cancers with increased p53 immunostaining are at high risk for tumor progression. In a multivariate analysis, increased p53 immunostaining was an independent prognosticator for patient survival. Increased p53 immunostaining occurs as an early event in low Stage pTa and pT1 tumors that ultimately progress to muscle invasive disease.

**982.** Compared to other children with bladder exstrophy, those who undergo prepubertal intestinal bladder augmentation are:

A) more likely to have nocturnal enuresis.
B) less likely to have bladder calculi.
C) more likely to be short in stature.
D) more likely to develop transitional cell carcinoma of the bladder.
E) more likely to develop Vitamin B and K deficiencies.

**Correct Answer** **C**

**Explanation** It has been demonstrated in several studies that linear growth is less, on average, in children who undergo intestinal bladder augmentation than in those who do not. The reasons for this are not clear, but may be related to subclinical metabolic acidosis. Bladder augmentation will not increase nocturnal enuresis, which is common in children with exstrophy. Those with bladder augmentation are more likely to have bladder stones. There may be an increased risk of neoplasia in augmented bladders, but this is more commonly adenocarcinoma. Long-term studies have failed to consistently demonstrate vitamin deficiencies in children undergoing gastrointestinal bladder reconstruction.

**983.** A 35-year-old woman with a sacral spinal cord injury has urinary incontinence on clean intermittent catheterization every three hours. Urine culture is negative. Videourodynamics reveal a detrusor leak point pressure of 50 cm H2O at 200 ml and no detrusor instability. The bladder neck is closed at rest and during Valsalva, but opens at the point of leakage. The next step is:

A) pubovaginal sling.
B) transurethral collagen injection.
C) ephedrine.
D) oxybutynin.
E) increase frequency of catheterization.

**Correct Answer** **D**

**Explanation** This patient clearly has urinary incontinence secondary to poor bladder compliance as indicated by a detrusor leak point pressure of 50 cm H2O and her history of a sacral spinal cord injury. Injury to the sacral spinal cord often results in poor bladder compliance which can cause urinary incontinence and damage to the upper urinary tract. The poor compliance is best initially treated with anticholinergics such as oxybutynin but may ultimately require augmentation cystoplasty. Procedures or medications designed to increase outlet resistance risk a worsening of the compliance and injury to the upper urinary tract.

**984.** The drug with the most rapid onset of action in treating BCG sepsis is:

A) isoniazid.
B) rifampin.
C) ethambutol.
D) para-aminosalicylic acid.
E) cycloserine.

**Correct Answer** **E**

**Explanation** Cycloserine inhibits BCG growth within 24 hours. The other drugs listed require 2-7 days to inhibit BCG growth. Because of its relatively rapid action, cycloserine can be life saving in patients with BCG sepsis.

**985.** A seven-year-old boy with cloacal exstrophy undergoes gastric augmentation with a catheterizable stoma and closure of the bladder neck. He was initially continent but now has diurnal leakage despite regular catheterization and saline irrigation. The most likely cause of the incontinence is:

A) incompetent catheterizable stoma.
B) fistula at site of bladder neck closure.
C) incomplete reservoir emptying.
D) high amplitude rhythmic contractions.
E) decreased reservoir capacity.

**Correct Answer** **D**

**Explanation** Although rhythmic contractions have been noted with all bowel segments, they can be present in up to 62%25 of patients following gastrocystoplasty. Use of a slightly larger segment of stomach that is longer along the greater curvature results in improved urodynamics. Addition of a segment of ileum to form a composite reservoir will resolve the compliance issue.

**986.** Enterocele repair is indicated when the:

A) enterocele is iatrogenic.
B) enterocele is visible.
C) patient experiences low back pain.
D) vaginal mucosa is ulcerated.
E) enterocele is increasing in size.

**Correct Answer** **D**

**Explanation** Conservative therapy for an enterocele may include avoiding straining, minimizing constipation, pelvic floor muscle exercises, hormonal therapy or a vaginal pessary. Surgery is indicated if the patient's lifestyle is affected and the condition cannot be managed conservatively. When vaginal mucosal ulceration develops topical estrogen may improve the health of the tissue but the effect is rarely complete or lasting.

**987.** During a radical cystoprostatectomy, intractable bleeding occurs after transection of the prostatomembranous urethra. Despite multiple suture ligatures, there is a persistent high volume venous blood loss from the retropubic space. The decision is made to ligate the dorsal vein. The appropriate tributaries can be found:

A) deep to Buck's fascia.
B) superficial to Buck's fascia.
C) superficial to Colles' fascia.
D) subcutaneously on the penile shaft.
E) at the level of the proximal crura.

**Correct Answer** **A**

**Explanation** The tributaries from the deep dorsal vein are beneath Buck's fascia. Ligation of the dorsal vein in this situation is rarely required.

**988.** The mechanism of action of quinolone antibiotics is:

A) inhibition of bacterial DNA gyrase.
B) binding to 50S ribosomal subunit.
C) inhibition of cell wall synthesis.
D) inhibition of dihydrofolate reductase.
E) activation of cell wall autolytic enzymes.

**Correct Answer** **A**

**Explanation** Antibiotics are classified according to their chemical structure and proposed mechanism of action. Quinolones inhibit bacterial DNA gyrase promoting double stranded DNA breakage and subsequently blocking DNA synthesis. The macrolide antibiotics such as erythromycin bind to the 50S ribosomal subunit of bacteria and inhibit RNA-dependent protein synthesis. The penicillins and cephalosporins act by inhibiting cell wall synthesis. These drugs also activate cell wall autolytic enzymes. Trimethoprim blocks the conversion of dihydrofolate to tetrahydrofolate by inhibiting the enzyme dihydrofolate reductase.

**989.** A 61-year-old man with Parkinson's disease has urinary frequency, urgency, urge incontinence, and weak stream. Urodynamics reveal involuntary detrusor contractions, a sustained voiding detrusor pressure of 88 cm H2O and a maximum flow of 7 ml/sec. Postvoid residual is 100 ml. Treatment should be:

A) oxybutynin.
B) diazepam.
C) terazosin.
D) baclofen.
E) imipramine.

**Correct Answer** **C**

**Explanation** The urodynamic data clearly documents involuntary detrusor contractions and bladder outlet obstruction, most likely due to BPH. The most reasonable pharmacologic approach is to use an alpha sympathetic blocking agent such as terazosin. Detrusor-external sphincter dyssynergia is not seen in Parkinson's obstruction. Thus diazepam and baclofen, which are intended to induce skeletal muscle relaxation, are not indicated. Both oxybutinin and imipramine may abolish the involuntary detrusor contractions, but the patient will probably not void because of the prostatic obstruction.

**990.** A 52-year-old man has muscle invasive transitional cell bladder carcinoma which on bimanual examination is fixed to the pelvic side wall. Serum creatinine is 2.8 mg/dl. A CT scan reveals extensive local tumor and bilateral hydronephrosis, but no nodal or visceral metastases. Treatment at this time should be:

A) chemotherapy with nonnephrotoxic agents.
B) percutaneous nephrostomies followed by chemotherapy.
C) radiation and chemotherapy.
D) retrograde ureteral stents followed by chemotherapy.
E) ileal conduit and chemotherapy.

**Correct Answer** **B**

**Explanation** Radical cystectomy and urinary diversion in a patient with this degree of renal failure would be associated with excessive morbidity and would not likely render the patient disease-free. A more reasonable approach would be to first place nephrostomy tubes to allow the patient to recover renal function. While some might perform radical cystectomy after renal function stabilizes, it is not likely to render the patient disease-free. Considering the moderate efficacy of platinum based chemotherapy, it is reasonable to treat the patient first with chemotherapy and to attempt surgical resection if he has a favorable response. While the impact of this approach on survival has not been established, significant response rates have been reported. If the patient does not respond, his survival is extremely limited and he should be palliated only. Urinary diversion at this point would affectively manage the renal failure but it offers no long-term hope of survival, unless chemotherapy is effective. Retrograde stent placement is very unlikely to be successful considering the location of the tumor.

**991.** A six-year-old uncircumcised boy has acute onset of gross hematuria, dysuria, and urinary frequency. There is no fever or flank pain. The urine is sterile and ultrasound shows normal kidneys with diffuse thickening of the bladder wall. The most appropriate management is:

A) observation.
B) circumcision.
C) acyclovir.
D) trimethoprim-sulfa.
E) bladder biopsy.

**Correct Answer** **A**

**Explanation** The clinical history and the findings during investigation of the urinary tract are most consistent with acute viral cystitis. The most common virus is adenovirus. This infection is more common in boys than in girls, may cause transient vesicoureteral reflux, and is usually self-limiting. Observation is the most appropriate management.

**992.** During multichannel pressure-flow urodynamics, true detrusor pressure is best determined by the:

A) difference between vesical and urethral pressure.
B) difference between vesical and abdominal pressure.
C) Valsalva leak point pressure.
D) sum of vesical and urethral pressure.
E) sum of vesical and abdominal pressure.

**Correct Answer** **B**

**Explanation** Detrusor pressure (Pdet) is not a directly measured parameter. Rather, it is calculated by subtracting abdominal pressure (Pabd), determined by an intra-rectal probe, from intravesical pressure (Pves) which is measured by a catheter located in the bladder. None of the other calculations are helpful in assessing detrusor pressure. Valsalva leak point pressure assesses the urethra's ability to withstand increases in intraabdominal pressure and is helpful in evaluating patients with stress urinary incontinence.

**993.** A 55-year-old woman with microhematuria has persistently positive voided urine cytologies. Evaluation consisting of two sets of cystoscopy and retrograde pyelograms, selective upper tract cytologies and random bladder/urethral strip biopsies are negative. The next step is:

A) repeat cytology in three months.
B) repeat random biopsies in three months.
C) intravesical BCG.
D) intravesical mitomycin C.
E) gynecological evaluation.

**Correct Answer** **E**

**Explanation** Over 90%25 of patients with unconfirmed positive cytologies will develop recognizable cancer in follow up. While the vast majority develop in the GU tract, 14%25 develop in the cervix, uterus and gastrointestinal tract. Therefore, following a thorough negative GU evaluation, a gynecological evaluation is warranted.

**994.** A 16-year-old boy has dysuria, a urethral discharge, and low grade fever. He has missed two previously scheduled appointments. The best treatment is:

A) penicillin 1 million units with probenecid 250 mg IM.
B) ciprofloxacin 500 mg BID for seven days.
C) ciprofloxacin 500 mg BID and doxycycline 100 mg BID for seven days.
D) cefixime 400 mg PO and azithromycin 1 g PO.
E) doxycycline 100 mg PO BID for seven days.

**Correct Answer** **D**

**Explanation** This boy has a presumptive diagnosis of gonococcal urethritis and should be treated at the time of initial contact to ensure adequate treatment. His compliance with follow-up should be questioned and one-time treatment is probably optimal. This would be best accomplished with oral cefixime and azithromycin for the presumptive associated chlamydia trachomatis that is present in 50%25 of patients with gonococcal urethritis. Treatment of sexual partner(s) is critical to treatment success. An alternative to cefixime is 125 mg of I.M. ceftriaxone.

**995.** Which renal artery occlusive disease is most likely to be associated with stable renal function:

A) intimal fibroplasia.
B) medial hyperplasia.
C) medial fibroplasia.
D) perimedial fibroplasia.
E) atherosclerotic disease.

**Correct Answer** **C**

**Explanation** In patients with medial fibroplasia, increases in serum creatinine or reduction in kidney size are not the rule. Despite the progressive nature of this disease, the risk of losing renal function over time because of progressive arterial occlusion is relatively small. Therefore, renal revascularization for preservation of renal function need not be routinely undertaken even for patients with bilateral disease. Operative intervention or transluminal angioplasty can be limited to those patients with hypertension refractory to control with drug therapy. Progressive ischemic nephropathy leading to loss of function is the end stage of the pathophysiology of perimedial or intimal fibroplasia, medial hyperplasia, or atherosclerotic disease.

**996.** During a radical retropubic prostatectomy, the maneuver utilized to expose and help preserve the neurovascular bundle to the corpora cavernosa is:

A) ligation of the puboprostatic ligaments.
B) posterolateral ligation of the prostatic pedicles.
C) division of the lateral prostatic fascia.
D) division of the bladder neck before dissection lateral to the prostate.
E) mobilization of the membranous urethra and dorsal vein complex within the lateral prostatic fascia.

**Correct Answer** **C**

**Explanation** Incision of the lateral prostatic fascia allows direct vision of the neurovascular bundles from the membranous urethra to the bladder neck. The puboprostatic ligaments contain no vessels and do not require ligation to give access to the dorsal veins and membranous urethra. Mobilization of the dorsal veins and membranous urethra together within the lateral prostatic fascia will usually injure the bundle. Division of the bladder neck before more distal dissection (antegrade approach) is more likely to lead to damage to the bundles than the retrograde approach (Walsh) in which the membranous urethra is severed prior to working cranially. Ligation of the prostatic pedicles posterolaterally, while occasionally necessary to encompass direct extension of tumor, will usually interrupt the neurovascular bundles.

**997.** A 25-year-old man with a history of posterior urethral valves will most likely have:

A) arteriogenic erectile dysfunction.
B) normal sperm count.
C) normal semen quality.
D) neurogenic erectile dysfunction.
E) abnormal Sertoli cell function.

**Correct Answer** **B**

**Explanation** Overall erectile function in valve patients is good although fertility has been reported to be compromised because of dribbling or absent ejaculate or retrograde ejaculation. Overall semen quality is not good (high viscosity and pH), but sperm counts have been reported as normal.

**998.** The incidence of renal cell carcinoma exceeds that of the general population for patients with:

A) medullary cystic disease.
B) acquired renal cystic disease.
C) adult polycystic kidney disease.
D) multiple endocrine neoplasia (Type 2).
E) tuberous sclerosis.

**Correct Answer** **B**

**Explanation** Patients with ESRD-associated acquired renal cystic disease develop renal cell carcinoma with an incidence 40 times that of the general population. The incidence is higher in males and correlates with the length of time on dialysis. None of the other conditions are associated with renal cell carcinoma.

**999.** Which hormonal therapy for prostate cancer is most likely to cause visual disturbances:

A) flutamide (Eulexin).
B) bicalutamide (Casodex).
C) ketoconazole (Nizoral).
D) nilutamide (Anandron).
E) leuprolide (Lupron).

**Correct Answer** **D**

**Explanation** Studies of Nilutamide have demonstrated that its unique side-effects, in comparison to other anti-androgens have included visual disturbances (light to dark adaptation) and rare cases of pulmonary fibrosis.

**1000** A four-year-old boy undergoes a left dismembered pyeloplasty with placement of an extraperitoneal drain. By the third postoperative day, there is minimal output from the drain. The urethral catheter is removed. The next day, output from the drain is 400 cc. The next step is:

A) advance drain slowly.
B) replace urethral catheter.
C) percutaneous nephrostomy.
D) internal ureteral stent.
E) open repair of anastomotic leak.

**Correct Answer** **B**

**Explanation** Postoperative placement of a urethral catheter after an open pyeloplasty appear prudent as the catheter lessens the risk for an anastomotic leak due to back pressure from either ipsilateral vesicoureteral reflux or a distended bladder. In the event of urinary leakage from the flank drain occurring after removal of the urethral catheter, catheter replacement should be the most appropriate next step in management.

**1001** A 62-year-old man undergoes angiography for evaluation of renal vascular disease. His serum creatinine is 1.8 mg/dl. The best treatment to prevent contrast related renal dysfunction is hydration and:

A) furosemide.
B) N-acetylcysteine.
C) dopamine.
D) mannitol.
E) prednisone.

**Correct Answer** **B**

**Explanation** Patients with established renal insufficiency (serum creatinine > 1.5 mg/dl) are considered to be at increased risk for contrast related renal injury. The antioxidant N-acetylcysteine in combination with hydration has been shown to significantly reduce contrast-induced nephrotoxicity in patients with chronic renal insufficiency compared with hydration alone. None of the other alternatives has been shown to be more renoprotective than hydration alone.

**1002** A 67-year-old man with a clinical stage T2bNoMo Gleason 7 prostate cancer with a PSA of 7.8 ng/ml is treated with 70 Gy external beam radiotherapy. His PSA nadirs to 0.8 ng/ml three months after therapy. Three months later he is asymptomatic, has a normal DRE, and a PSA of 6.5 ng/ml. The most likely explanation for the elevated PSA level is:

A) prostatic infarct.
B) persistent prostate cancer.
C) PSA bounce effect.
D) radiation-induced prostatitis.
E) insufficient period of observation after therapy.

**Correct Answer** **B**

**Explanation** A marked increase in serum PSA after a nadir within six months of external beam radiotherapy is a sign of persistent local or occult metastatic prostate cancer and has a poor prognosis. Radiation induced cellular injury or prostatitis may cause a minor rise in PSA which usually returns to normal within a few weeks (PSA bounce) and is more common after interstitial brachytherapy than external beam therapy.

**1003** A full-term newborn boy had antenatal hydronephrosis identified during in-utero ultrasound. Ultrasound and VCUG four hours post-natally are normal. The next step is:

A) no further evaluation.
B) MAG-3 renal scan in three months.
C) ultrasonography in three months.
D) repeat ultrasound in 24 hours.
E) IVP in three months.

**Correct Answer** **C**

**Explanation** Timing of the neonatal ultrasound is important to interpretation of its clinical relevance. The renal pelvis may be moderately dilated on antenatal ultrasonography, yet appear normal in the first few days of life because oliguria during the first 24 to 48 hours of life might cause a distended renal pelvis to decompress transiently. If the renal ultrasound is normal, a VCUG should be done to determine whether reflux is present, and a renal ultrasound repeated in six weeks.

**1004** A 45-year-old woman with no prior urologic history is evaluated as a potential kidney donor for her crossmatch negative, zero antigen-matched sister. IVP reveals complete right ureteral duplication. Renal arteriography reveals one artery on the left and two on the right. This potential donor should:

A) be eliminated from further consideration for donation.
B) undergo cystoscopy and VCUG.
C) undergo a differential renal function scan.
D) undergo right donor nephrectomy.
E) undergo left donor nephrectomy.

**Correct Answer** **E**

**Explanation** With current immunosuppressive regimens, even a zero antigen match kidney from a living related donor can be expected to function with a high success rate at one year. Currently, the only prerequisite for donation in this setting is a negative cross match. The uncomplicated duplication anomaly does not preclude donation. If there are single arteries bilaterally, the nonduplicated side should be taken for donation as the transplant itself will be less complicated and the donor will still be left with a functionally normal kidney. With two ureters on the duplicated (right) side, the choice for donation of the left kidney is even clearer.

**1005** A patient with high-risk stage B2 (T2b) prostatic carcinoma is to have a staging pelvic lymphadenectomy prior to definitive external beam radiation. The primary advantage of an extraperitoneal versus intraperitoneal approach is:

A) better exposure of the common iliac nodes.
B) better exposure of the obturator fossa.
C) lower incidence of lymphoceles.
D) lower incidence of post-radiation enteritis.
E) lower incidence of ureteral injury.

**Correct Answer** **D**

**Explanation** The advantage of an intraperitoneal approach is exposure of the nodes along the common iliac and aortic area but this approach is associated with a significant increase of post-radiation enteritis due to bowel adhesions. Also, with the intraperitoneal approach, a prolonged hospital stay with increased ileus and wound infections is not uncommon. Therefore, most urologists would recommend the extraperitoneal approach.

**1006** A two-year-old boy with stranguria develops gross hematuria. Urine culture is negative. Ultrasound shows normal kidneys and a polypoid mass at the base of the bladder. The next step is:

A) CT scan with contrast.
B) IVP.
C) VCUG.
D) MRI scan with gadolinium.
E) cystoscopy.

**Correct Answer** **C**

**Explanation** Congenital urethral polyps are an unusual cause of bladder outlet obstruction. They are benign fibroepithelial growths that usually originate from the verumontanum and extend towards the bladder. These polyps may also originate at the bladder neck. A VCUG will be diagnostic showing a filling defect at the bladder base. During voiding, the polyp will prolapse, causing outlet obstruction. Transurethral resection with electrocautery is usually definitive.

**1007** A 42-year-old woman has a slow rise in serum creatinine from 1.2 to 2.0 mg/dl one year after uneventful live donor transplantation. Ultrasound shows significant hydronephrosis and no perinephric fluid collection. The next step is:

A) CT scan.
B) MAG-3 renal scan.
C) VCUG.
D) retrograde ureterogram.
E) renal allograft biopsy.

**Correct Answer** **C**

**Explanation** The absence of a perinephric fluid collection and late presentation of hydronephrosis accompanied by slowly declining renal function suggests the possibility of significant reflux into the transplant ureter. The most appropriate initial diagnostic study is a voiding cystourethrogram.

**1008** A 79-year-old man with metastatic prostate cancer has a rapidly rising PSA on three consecutive occasions while on leuprolide and flutamide. He is asymptomatic. The most appropriate treatment is:

A) bilateral orchiectomy.
B) discontinue flutamide.
C) discontinue leuprolide and flutamide.
D) strontium-89 radiotherapy.
E) systemic chemotherapy.

**Correct Answer** **B**

**Explanation** Approximately 30%25 of patients experience a 50%25 decrease in serum PSA when flutamide is discontinued after failing combined androgen deprivation therapy with leuprolide or orchiectomy with flutamide. In some of these cases objective responses also occur. Only patients receiving combined therapy appear to respond. The androgen withdrawal syndrome has also been reported with bicalutamide. Strontium-89 and/or chemotherapy are only indicated for the palliation of symptomatic bony metastases.

**1009** A 38-week-gestation newborn with posterior urethral valves has a serum creatinine of 1.8 mg/dl. That level:

A) initially falls with a rapid rise in GFR.
B) is an ominous predictor of future renal function.
C) will decrease with completion of nephrogenesis.
D) is not reflective of the degree of renal function impairment.
E) will result in increased active sodium absorption from the descending limb of the loop of Henle.

**Correct Answer** **D**

**Explanation** The creatinine in a newborn is reflective of maternal renal function and is not representative of the degree of renal impairment or lack thereof due to the obstruction. This creatinine level may not change with an increase in GFR if renal dysgenesis has occurred. At 38 weeks, nephrogenesis is complete and will not affect the level of the creatinine.

**1010** A calyceal fistula in a renal allograft is most frequently associated with:

A) multiple renal arteries.
B) multiple renal veins.
C) ureteropyelostomy.
D) renal capsule injury.
E) hyperacute rejection.

**Correct Answer** **A**

**Explanation** Calyceal fistulae are an uncommon cause of urinary tract fistulae in renal transplants. They are more commonly seen in allografts with multiple renal arteries. They are usually caused by segmental renal infarction secondary to occlusion of a renal artery branch.

**1011** A 69-year-old man with a large clinical Stage T3a (C) prostate cancer undergoes three months of androgen deprivation therapy prior to radical prostatectomy. The only beneficial effect of this therapy is:

A) decrease the size of the prostate gland.
B) downstage the tumor to an organ-confined lesion.
C) make the surgery technically easier.
D) decrease PSA recurrence rate.
E) improve the long-term, cause-specific survival.

**Correct Answer** **A**

**Explanation** There has been some enthusiasm for androgen deprivation therapy prior to radical prostatectomy for patients with large Stage B2 (T2c) and small Stage C (T3a) prostate cancers. The theory was that this therapy would "downstage" the cancer and make the surgical procedure technically easier. While prostate gland size is decreased, ultimately, the PSA failure rate is unchanged.

**1012** A newborn infant is circumcised with a Gomco clamp after administration of a local anesthetic containing 1:1,000 epinephrine. Blanching of the penile skin and glans penis is observed. Physical examination demonstrates mild peripheral vasoconstriction of the hands and feet, blood pressure of 90/60 mm Hg, and a pulse of 160. The next step is:

A) I.V. papaverine.

B) I.V. propranolol.

C) subcutaneous phentolamine.

D) caudal sympathetic block.

E) oral nifedipine.

**Correct Answer** **C**

**Explanation** Inadvertent injection of concentrated epinephrine can occur with the use of local anesthetics. Vasoconstrictors are used to provide a bloodless operative field. Any physician performing local blocks should be familiar with the treatment of their complications. The patient has primarily local effects of the injected epinephrine. These are best treated with the alpha-adrenergic antagonist phentolamine delivered subcutaneously at the injection site at a dose of 0.1 to 0.2 mg/kg. The patient should be carefully monitored for untoward effects of the epinephrine and the phentolamine.

**1013** Calcium reabsorption in the distal renal tubule is mediated primarily by:

A) Vitamin D.
B) aldosterone.
C) hypocalcemia.
D) urinary sodium.
E) parathyroid hormone.

**Correct Answer** **E**

**Explanation** Parathyroid hormone mediates renal reabsorption of calcium in the distal nephron. More proximally in the nephron, calcium is reabsorbed in concert with sodium. Vitamin D influences calcium homeostasis primarily by enhancing small bowel absorption. Significant hypocalcemia stimulates renal calcium preservation by inducing parathyroid hormone secretion. Aldosterone mediates distal renal preservation of sodium in exchange for available hydrogen and/or potassium, and has no direct effect on calcium reabsorption.

**1014** A 50-year-old man has a large right renal mass with tumor thrombus extending into the atrium. Under hypothermia and circulatory arrest, he undergoes nephrectomy with removal of the tumor thrombus. The most frequent significant complication is:

A) hepatic dysfunction.
B) pulmonary air embolus.
C) central nervous system deficit.
D) coagulopathy and hemorrhage.
E) tumor emboli.

**Correct Answer** **D**

**Explanation** Hypothermia and circulatory arrest is the treatment of choice for a renal tumor with this level of cephalad extension. This technique has several potential complications such as CNS or hepatic damage yet the most common difficulty associated with this technique is hemorrhage associated with platelet and clotting factor dysfunction.

**1015** A ten-year-old boy has a solitary right testicle on his physical examination for Little League football. Left inguinal exploration has verified blind-ending gonadal vessels. The preferred recommendation is:

A) MRI scan of the abdomen and pelvis.
B) laparoscopy.
C) abdominal exploration.
D) he play football wearing a protective cup.
E) he not play football.

**Correct Answer** **D**

**Explanation** It is possible to document absence of a testis by demonstration of blind-ending spermatic vessels in the inguinal canal. If such evidence is unequivocal, as stated in this case, then no further imaging is necessary. There is no need to discourage football as long as a protective cup is worn. Advice about possible torsion and self-exam should also be offered. The Committee on Sports Medicine of the American Academy of Pediatrics recommends that patients with an absent testicle be allowed to participate in contact/collision sports if they wear a protective cup.

**1016** Medullary sponge kidney disease is:

A) cystic dilation of the distal convoluted tubules.
B) a bilateral and hereditary renal abnormality.
C) characterized by hypocitraturia.
D) best diagnosed by IVP.
E) a precursor of end stage renal disease.

**Correct Answer** **D**

**Explanation** On intravenous pyelography, medullary sponge kidney is characterized by the puddling of contrast material in ectatic papillary collecting ducts; the distal convoluted tubules are not dilated in this condition. It is not an inherited condition and may be unilateral in upwards of 25%25 of patients. Individuals with this disorder can develop renal stones and nephrocalcinosis. They can have a spectrum of metabolic abnormalities including hypercalciuria and hypocitraturia.

**1017** A 40-year-old man with von Hippel-Lindau syndrome has multiple solid tumors ranging from 2-4 cm throughout the entire left kidney. The right kidney has a 6 cm lower pole solid mass. There is no evidence of metastatic disease. The best management is:

A) bilateral tumor enucleations.
B) bilateral nephrectomy and dialysis.
C) left radical nephrectomy and right partial nephrectomy.
D) bilateral cryoablation.
E) surveillance.

**Correct Answer** **C**

**Explanation** Patients with von Hippel-Lindau disease are more likely to present with bilateral synchronous renal cell carcinoma than those with sporadic tumors. Results of nephron-sparing operations have preserved renal function in many patients and when complete tumor removal of all radiographically visible lesions is possible is the procedure of choice, often resulting in a prolonged disease-free interval. However, because of the multifocal nature of the tumors in VHL, these patients are at high risk for recurrence and must be followed closely.

**1018** A ten-year-old boy has a perineal "butterfly" hematoma following a straddle injury. This suggests rupture of the:

A) tunica albuginea.
B) corpus spongiosum.
C) corpus cavernosum.
D) posterior urethra.
E) Colles' fascia.

**Correct Answer** **B**

**Explanation** Rupture of the corpus spongiosum and anterior urethra will be manifest by a perineal "butterfly" hematoma, limited by Colles' fascia. The corpora cavernosa, tunica albuginea, and posterior urethra are unlikely to be involved in a straddle injury. Posterior urethral injuries occur above the pelvic diaphragm are usually associated with a pelvic fracture, and not as a consequence of a straddle injury.

**1019** A 35-year-old man with recurrent calcium oxalate nephrolithiasis has a normal serum calcium and high urinary calcium. The best treatment is:

A) potassium citrate.
B) thiazide.
C) low calcium diet.
D) cellulose phosphate.
E) reduced dietary salt.

**Correct Answer** **B**

**Explanation** The patient's clinical findings are consistent with metabolic stone activity secondary to renal leak hypercalciuria. The most effective therapy for this is thiazide diuretics. The effect of thiazide diuretics may be blocked by high dietary salt intake or increased vascular volume.

**1020** A 32-year-old woman has an incidentally discovered asymptomatic 3 cm angiomyolipoma in the central portion of the right kidney. One year later, the mass has enlarged to 5 cm. The left kidney is normal and the serum creatinine is 0.9 mg/dl. The next step is:

A) surveillance.
B) selective embolization.
C) partial nephrectomy.
D) simple nephrectomy.
E) radical nephrectomy.

**Correct Answer** **B**

**Explanation** Tumor size and symptoms are useful predictors of the clinical course of angiomyolipoma. Most tumors less than 4 cm rarely cause significant symptoms. A recent review recommends annual CT or ultrasound studies for patients with isolated small tumors and semiannual follow-up for patients with tumors larger than 4 cm who are asymptomatic or mildly symptomatic. If the tumor grows, embolization or renal-sparing surgery should be considered. This lesion has grown. Its location makes it less amenable to partial resection, and a nephrectomy would sacrifice significant normal parenchyma. Selective arterial embolization is minimally invasive and can prevent future expected hemorrhage of this lesion. Although cryoablation or radiofrequency ablation have been attempted in this situation, they are considered experimental.

**1021** The inferior mesenteric artery is ligated during a RPLND for testis cancer. Blood supply to the sigmoid colon is now derived from which artery:

A) right colic.
B) superior hemorrhoidal.
C) middle hemorrhoidal.
D) sigmoid.
E) middle sacral.

**Correct Answer** **C**

**Explanation** The main arterial supply of the sigmoid colon is from the sigmoid and superior hemorrhoidal branches of the inferior mesenteric artery. The major collateral vessels are the middle and inferior hemorrhoidal arteries which arise from the internal iliac artery. They anastomose freely with the superior hemorrhoidal branches.

**1022** The principal source of operator radiation exposure during endourologic procedures is:

A) the primary radiation beam.
B) radiation leakage from the x-ray tube.
C) radiation scatter from the patient.
D) radiation scatter from endoscopic instruments.
E) radiation scatter from the operating room walls and floor.

**Correct Answer** **C**

**Explanation** Scattering of the primary beam from the patient is the primary source of radiation exposure to the operator during endourologic procedures. For this reason, maximizing the distance between the operator and the patient during fluoroscopy is a very effective method of reducing exposure.

**1023** Patients with metastatic renal cell cancer respond best to immunotherapy in the setting of:

A) bone metastases.
B) lung metastases.
C) good performance status.
D) liver metastases.
E) prior nephrectomy.

**Correct Answer** **C**

**Explanation** Biologic response modifiers have shown modest activity in patients with metastatic renal cell cancer. While lung metastases have responded better than other sites of metastatic diseases, the finding which is most predictive of a favorable response is performance status. Prior nephrectomy has not been proved to be a strong predictor of response to therapy.

**1024** The periurethral prostatic glands in a young man:

A) comprise the bulk of the prostate.
B) comprise a small portion of the prostate.
C) empty into the ejaculatory duct.
D) are derived from the Wolffian duct.
E) are vestigial remnants.

**Correct Answer** **B**

**Explanation** Embryologically the prostate develops from the urogenital sinus during the third fetal month. The prostate develops from mesoderm to form the inner zone while the outer zone develops from endoderm. These zones form concentric rings around the prostatic urethra. Generally speaking the inner zone eventually develops benign prostatic hyperplasia (BPH) and the outer zone is where cancers later form. In younger patients the periurethral glands within the prostate are not prominent since BPH has not yet developed.

**1025** Patients with cystine stones unresponsive to hydration and alkalization are best treated with:

A) N-acetylcysteine.
B) Tham-E.
C) alpha-mercaptopropionylglycine.
D) penicillamine.
E) acetohydroxamic acid.

**Correct Answer** **C**

**Explanation** Alpha-mercaptopropionylglycine (alpha-MPG) is an oral agent, first introduced in 1968, which reduces cystine stone formation. Approximately 25%25 of the oral dose appears in the urine and, like penicillamine, participates in thiol-disulfide exchange with cystine, thus increasing the latter's solubility. Alpha-MPG appears to be as effective as penicillamine in reducing cystine excretion and significantly reduces the individual stone formation rate, while entailing less significant toxicity. N-acetylcysteine is not effective orally. Tham-E is only used for percutaneous dissolution. Acetohydroxamic acid inhibits bacterial urease and is not indicated for cystine stones.

**1026** A 57-year-old woman on hemodialysis for ten years has gross hematuria and mild right flank pain. Urine cytology and culture are negative. CT scan reveals small kidneys bilaterally with multiple cysts. Cystoscopy reveals bloody efflux from the right ureteral orifice, clear efflux from the left orifice, and normal bladder mucosa. The next step is:

A) antibiotic therapy.
B) angioinfarction of the right kidney.
C) right nephrectomy.
D) needle biopsy of kidney.
E) repeat CT scan in six months.

**Correct Answer** **C**

**Explanation** Approximately one-third of patients on long-term hemodialysis develop cysts in end-stage kidneys, and less than 10%25 of this group will develop renal cell carcinoma. The patient in question has unilateral bleeding and no evidence of infection as a cause. Due to the increased risk of malignancy, right nephrectomy is recommended. A negative needle biopsy alone would not be sufficient to exclude tumor.

**1027** Dilated Cowper's ducts seen on urethrography are:

A) lateral to the membranous urethra.
B) posterior to the prostatic urethra.
C) anterior to the bulbous urethra.
D) posterior to the bulbous urethra.
E) posterior to the membranous urethra.

**Correct Answer** **D**

**Explanation** Cowper's glands are located on each side of the membranous urethra within the urogenital diaphragm. The duct of each is one inch long and passes through the urethral opening in the urogenital diaphragm along the posterior aspect of the bulbous urethra and opens into the posterior aspect of the bulb.

**1028** A 47-year-old man develops severe flank pain and gross hematuria following SWL for a 2 cm renal calculus. His vital signs remain stable. A CT scan of the abdomen reveals no hydronephrosis and a loculated subcapsular mass along the lateral aspect of the kidney. The next step is:

A) percutaneous drainage.
B) ureteral stent.
C) renal exploration.
D) epsilon aminocaproic acid (Amicar).
E) analgesics and observation.

**Correct Answer** **E**

**Explanation** Perirenal hematoma following shock wave lithotripsy may occur in as many as 5 -10%25 of patients. However, it is clinically significant in less than 1%25. The hematoma is usually self-limiting. Subsequent absorption occurs over a 6-9 month period. Accordingly conservative therapy alone is all that is indicated unless the patient is hemodynamically unstable. Interventional therapy is not indicated at this early stage.

**1029** In a patient with a clinical Stage I primary nonseminomatous germ cell tumor, which of the following histologic subtypes is predictive of relapse during surveillance:

A) teratoma.
B) teratocarcinoma.
C) embryonal cell carcinoma.
D) yolk sac carcinoma.
E) mixed germ cell tumor.

**Correct Answer** **C**

**Explanation** Relapse rate for patients with embryonal cell carcinoma, or malignant teratoma undifferentiated (MTU) in the British classification, is significantly higher than the other subgroups, with a failure rate of 40-50%25 in most series. Second highest was choriocarcinoma with a 33%25 failure rate, with teratocarcinoma having only a 7%25 relapse rate. Although the numbers are small, no patient with teratoma or yolk sac carcinoma has relapsed in Peckham's series.

**1030** The ductuli efferentes of the testis enter the:

A) seminiferous tubules.
B) caput epididymis.
C) cauda epididymis.
D) vas deferens.
E) rete testis.

**Correct Answer** **B**

**Explanation** Testicular tubules, organized into 200-300 conical tubules, drain into 20-30 tubuli recti which enter the rete testis, a network of ducts in the testicular mediastinum. At the upper end of the mediastinum, the ductuli efferentes emerge from the testis to enter the head (caput) of the epididymis. The cauda epididymis is the most distal portion of this organ from the testis.

**1031** A 70-year-old man with diabetes, atrial fibrillation, and congestive heart failure has right renal colic. An IVP shows a 1 cm right renal pelvic stone that is partially obstructing, and 2 left calyceal stones measuring 0.5 cm each. Over the next 36 hours, he is comfortable but voids only 50 ml. The most likely explanation is:

A) contrast induced nephropathy.
B) renal infarction.
C) bilateral ureteral obstruction.
D) dehydration.
E) renal vein thrombosis.

**Correct Answer** **A**

**Explanation** Acute renal failure after IVP may occur in 2 of 1000 diabetics as opposed to 0 in 100,000 nondiabetic patients. In addition, renal insufficiency and generalized atherosclerosis increase the risks of acute renal insufficiency related to the use of intravascular contrast. Theories of toxicity relate to direct toxic effects of the contrast media on the proximal tubular cells, inschemia from damage to the renal microvasculature, and hypertonicity of the contrast media causing nephrotoxicity. This risk may be reduced by hydration. Bilateral complete obstruction, renal vein thrombosis, and dehydration as causes for oliguria or anuria would be unusual in this situation.

**1032** A 20-year-old man has a 4 cm left testicular mass. Serum AFP is normal and beta-hCG is minimally elevated. He undergoes left radical orchiectomy. Histology demonstrates anaplastic seminoma with invasion of the rete testes. CT scan of the abdomen, pelvis, and chest is normal. Management should be:

A) surveillance.
B) bilateral retroperitoneal lymph node dissection.
C) systemic chemotherapy.
D) retroperitoneal external beam radiation.
E) left modified retroperitoneal lymph node dissection.

**Correct Answer** **D**

**Explanation** Anaplastic seminoma has a greater metastatic potential and worse prognosis than classic seminoma. However, stage for stage, it has comparable response rates to classic seminoma. This patient has clinical Stage I disease and should be treated with external beam radiation therapy to the retroperitoneum.

**1033** The most frequent histologic finding in the cryptorchid testis of a four-year-old boy is:

A) decreased number of germ cells.
B) increase in peritubular fibrosis.
C) late maturation of the Sertoli cell.
D) alteration of the tubular basement membrane.
E) decreased number of interstitial cells.

**Correct Answer** **A**

**Explanation** The most striking consistent change seen in the cryptorchid testis is decrease in number of germ cells due to failure of maturation of the germinal epithelium. Increase in peritubular fibrosis occurs from puberty onward. Very little difference is noted in the tubular basement membrane in the cryptorchid versus the normal testis. The delay in maturation of the Sertoli cells appears only in older children with cryptorchism, and decreased numbers of interstitial cells do not seem to be a feature of cryptorchism in general.

**1034** The most important factor to consider for percutaneous access to a continent urinary reservoir for removal of calculi is:

A) stone composition.
B) stone volume.
C) stone number.
D) adjacent structures.
E) type of diversion.

**Correct Answer** **D**

**Explanation** It is important to select the ideal puncture site for percutaneous access into a continent reservoir. Computed tomography or ultrasonography can be used to guide access to avoid injury to adjacent bowel.

**1035** A 32-year-old man has clinical Stage I seminoma of the left testis. At the time of radical orchiectomy, he undergoes a right testis biopsy because the right testis is atrophic. Biopsy of the right testis demonstrates testicular intra-epithelial neoplasia (CIS). The next step is 20 Gy to the retroperitoneum and:

A) right orchiectomy and androgen replacement.
B) platinum-based chemotherapy.
C) 20 Gy to the right testis.
D) serial testicular ultrasounds.
E) repeat testis biopsy in six months.

**Correct Answer** **C**

**Explanation** Involvement of the contralateral testis with intraepithelial neoplasia (CIS) occurs in 4 -5%25 of patients with germ cell tumors. The presence of an atrophic contralateral testis appears to be a significant risk factor for this condition. While it is controversial, there does appear to be significant risk of developing tumor in the contralateral testis if left untreated. In an attempt to avoid bilateral castration, localized radiation was introduced in 1985 as treatment of CIS in the contralateral gonad. Radiotherapy eradicates CIS cells to prevent cancer development and to preserve sufficient Leydig cell function. 20-Gy has been shown to be highly effective and more effective than chemotherapy in this setting while preserving Leydig cell function in most patients.

**1036** Ectopic thoracic kidney is most commonly associated with:

A) anomalous vasculature.
B) contralateral UPJ obstruction.
C) vesicoureteral reflux.
D) no intrinsic pathology.
E) duplex drainage system.

**Correct Answer** **D**

**Explanation** Neither the thoracic kidney nor the contralateral orthotopic kidney are predisposed to an increased risk for obstruction or any pathologic disturbance. They are typically asymptomatic except for position and the renal vasculature is normal.

**1037** A 45-year-old woman undergoes evaluation for recurrent calcium phosphate stones. Serum calciums range from 9.6-10.0 mg/dl (normal range 8.5-10.2 mg/dl); PTH 62 pg/dl (normal < 65 pg/dl); urine calcium 281 mg/day (normal < 200 mg/day); and urinary citrate 460 mg/day (normal > 320 mg/day). To further elucidate her metabolic diagnosis, she should be placed on a two week course of:

A) thiazides.
B) mercaptoproprinoglycine.
C) sodium cellulose phosphate.
D) orthophosphate.
E) potassium citrate.

**Correct Answer** **A**

**Explanation** This patient has a picture equivocal for primary hyperparathyroidism with hypercalciuria, serum calcium at the upper limits of normal and a high, but normal serum PTH value. A "thiazide challenge" would help to differentiate renal hypercalciuria from primary hyperparathyroidism. After treating her with a thiazide diuretic for two weeks, one would expect her serum calcium and PTH to remain within the normal limits and her urinary calcium to return to normal if she has renal hypercalciuria. If, however, the patient has true hyperparathyroidism, the patient would become overtly hypercalcemic and her serum PTH would also become elevated with no significant change in the urinary calcium excretion. One should bring this patient back to the office on thiazide therapy for repeat evaluation.

**1038** In men with a history of surgically treated cryptorchidism, the factor which most influences the risk of developing testicular cancer is:

A) original location of testis.
B) gonocyte transformation failure.
C) testicular-epididymal nonunion.
D) carcinoma in situ.
E) age at orchiopexy.

**Correct Answer** **D**

**Explanation** The risk of testicular cancer in men with a history of cryptorchism has been adjusted downward in recent years to 1.1 percent with a relative risk of 4.7. Approximately 15 to 20 percent of tumors occur in a contralateral descended testis. Carcinoma in situ is present in 1.7 to 3 percent of previously cryptorchid testes and is postulated to originate within the fetal gonocytes. The correlation, if any, between failure of gonocyte transformation in infant cryptorchid testes and carcinoma in situ is unknown. The risk for subsequent development of testicular cancer in gonads that harbor carcinoma in situ is at least 50 per cent.

**1039** A five-year-old boy with hepatosplenomegaly develops progressive azotemia and a renal concentrating defect. Ultrasound of the kidneys demonstrates slight enlargement with multiple small (1-2 cm) cortical cysts. An uncle died of renal disease. The most likely diagnosis is:

A) familial juvenile nephronophthisis.
B) autosomal recessive polycystic kidney disease.
C) autosomal dominant polycystic kidney disease.
D) tuberous sclerosis.
E) renal-retinal dysplasia.

**Correct Answer** **B**

**Explanation** The presence of autosomal recessive polycystic kidney disease varies depending on age. In older children, hepatosplenomegaly due to portal hypertension may be prominent and associated with renal interstitial fibrosis and cortical cystic disease. Autosomal dominant polycystic disease does not usually cause renal insufficiency at such an early age and the cysts occur throughout the kidney. Familial juvenile nephronophthisis and renal-retinal dysplasia are associated with renal cysts which are typically located in the medulla but the kidneys are usually shrunken and scarred. Renal cysts do occur in tuberous sclerosis but renal failure is usually attributed to multiple solid angiomyolipomas.

**1040** The physiologic change during the third trimester of pregnancy that offers protection against kidney stone formation is:

A) increased ureteral peristalsis.
B) increased ureteral dilation.
C) increased urinary citrate.
D) decreased urinary calcium.
E) decreased urinary uric acid.

**Correct Answer** **C**

**Explanation** Although ureteral peristalsis does increase, and the ureters do dilate during pregnancy, neither of these physiologic changes are associated with decreased stone formation. During the third trimester of pregnancy, urinary citrate levels are known to increase dramatically. Urinary citrate is a potent inhibitor of calcium oxalate crystallization, and should help protect against stone formation. Neither hypocalciuria nor hypouricosuria are routinely associated with pregnancy.

**1041** A 19-year-old man has a 1 cm mass in the right testis. Inguinal orchiectomy is performed, and final pathology is pure choriocarcinoma. CT scan shows a 2 cm para-aortic node, and chest x-ray shows four small nodules within the right lower lung. Beta-hCG remains elevated postoperatively. The most appropriate management is:

A) biopsy of the lung lesions.
B) retroperitoneal node dissection and pulmonary resection.
C) systemic chemotherapy and radiation.
D) systemic chemotherapy alone.
E) bone marrow transplant and systemic chemotherapy.

**Correct Answer** **D**

**Explanation** With chest lesions, pure choriocarcinoma, and elevated beta-hCG, this patient has metastatic choriocarcinoma. This tumor, despite its small size, is very aggressive and can spread hematogenously as well as via lymphatics. Appropriate management is aggressive chemotherapy. Radiation does not have a place in management of this tumor.

**1042** A three-year-old child with a duplicated collecting system has reflux to the upper renal segment upon voiding. The most appropriate statement is:

A) this type of anomaly is commonly bilateral.
B) the ureter to the upper segment is probably ectopic.
C) the ureter to the lower segment is probably ectopic.
D) the ureter to the lower segment is probably obstructed.
E) reflux to the upper system occurs frequently with complete ureteral duplication.

**Correct Answer** **B**

**Explanation** With complete ureteral duplication, the upper pole ureter is more likely to have an ectopic insertion outside the bladder. Reflux is more common into the lower pole segment. Reflux into the upper pole moiety alone occurs in children when the orifice is ectopic in the bladder neck or urethra. The ureter lacks trigonal support and has an inadequate submucosa tunnel. This situation occurs in less than 10%25 of cases of complete ureteral duplication. Ureteral duplication, incomplete or complete, occurs in 0.8%25 of the population. As many as 40%25 of cases are bilateral, but most of these are insignificant partial ureteral duplications. Bilateral ectopic insertion of the upper pole ureter with reflux into this moiety alone is very rare.

**1043** The medication used for patients with HIV infection most likely to result in renal calculus disease is:

A) didanosine.
B) ritonavir.
C) indinavir.
D) acyclovir.
E) cidofovir.

**Correct Answer** **C**

**Explanation** Indinavir has been associated with crystalluria and renal calculus disease, especially with urine pH of greater than 5.5. Approximately 4-40%25 of patients taking indinavir have symptoms of clinical nephrolithiasis. Indinavir stones are the only ones that are not evident by KUB or non-contrast CT.

**1044** A 35-year-old man with Cushing's syndrome has an elevated plasma cortisol level that is not suppressed with high-dose dexamethasone. Urinary 17-ketosteroid and 17-hydroxysteroid levels are markedly elevated. The most likely diagnosis is:

A) pituitary adenoma.
B) ectopic ACTH production.
C) adrenal adenoma.
D) adrenal carcinoma.
E) anabolic steroid abuse.

**Correct Answer** **D**

**Explanation** Lack of suppression after high dose dexamethasone usually indicates an autonomous adrenal source of steroids. The high level of ketosteroids makes ectopic ACTH less likely (hydroxysteroids are usually preferentially increased). Exogenous anabolic steroids should not elevate hydroxysteroids. Elevated urinary ketosteroid levels in a patient with Cushing's syndrome is highly suggestive of adrenal malignancy.

**1045** A two-year-old girl has a palpable abdominal mass. CT scan demonstrates a 5 cm enhancing left renal mass. The right kidney is normal. The most appropriate treatment is:

A) percutaneous biopsy and chemotherapy.
B) left radical nephrectomy and postoperative chemotherapy.
C) left partial nephrectomy.
D) left radical nephrectomy and right renal biopsy.
E) preoperative chemotherapy and left radical nephrectomy.

**Correct Answer** **B**

**Explanation** This mass is most likely a Wilms' tumor. The guidelines of the National Wilms' Tumor Study Group recommends radical nephrectomy of the involved kidney. The use of partial nephrectomy in the management of a Wilms' tumor located in a polar region is not part of the standard protocols.

**1046** A 23-year-old woman has acute flank pain and hematuria during her first trimester of pregnancy. The study with the greatest radiation exposure to the fetus is:

A) IVU.
B) CT abdomen.
C) CT pelvis.
D) DTPA renal scan.
E) MAG-3 renal scan.

**Correct Answer** **C**

**Explanation** Fetal doses are highest for CT pelvis > CT abdomen > IVU > DTPA scan > KUB > MAG3 renal scan. CT pelvis is 25-80 mGy, abdomen 8-45 mGy, DTPA 1.5-4 mGy, MAG3 0.7 mGy and IVU 1.7-10mGy.

**1047** A 40-year-old woman had bilateral total adrenalectomies for Cushing's disease after failed transsphenoidal hypophysectomy with complete resolution of symptoms and signs. Cortisol and fluorocortisone are given chronically. However, progressive hyperpigmentation and visual disturbances occur. This is most consistent with:

A) Addison's disease.
B) pituitary adenoma.
C) excessive glucocorticoid replacement.
D) residual functioning adrenal tissue.
E) ectopic melanocyte-stimulating hormone secretion.

**Correct Answer** **B**

**Explanation** Approximately 10-20%25 of patients who have bilateral adrenalectomy for Cushing's disease later develop pituitary tumors, almost always chromophobe adenomas (Nelson syndrome). Progressive hyperpigmentation, headache, and visual disturbances are due to the expanding adenoma that is shown by skull x-rays or CT scans of the sella turcica.

**1048** A two-year-old boy has a cystic left upper pole testicular mass on ultrasound. Inguinal excision of the lesion is done leaving the lower half of the testis. Final pathology reveals teratoma with clear margins. AFP and beta-hCG are negative. Chest and abdominal CT scans are negative. The next step is:

A) observation.
B) radical orchiectomy.
C) radical orchiectomy and systemic chemotherapy.
D) radical orchiectomy and modified RPLND.
E) systemic chemotherapy.

**Correct Answer** **A**

**Explanation** The diagnosis of teratoma of the testis can be suspected on preoperative ultrasound. This allows the surgeon to consider a testis sparing procedure. Prepubertal teratomas have a benign clinical course and can be managed with surgery only. Although only a limited number of patients have been treated with enucleation of the tumor, there have been no recurrences reported to date. Theoretical concerns include tumor seeding, incorrect diagnosis, or multifocal microscopic disease within the testis. However, frozen section diagnosis of teratoma is straightforward due to the characteristic histologic features of the tumor. In addition, a detailed review of 21 cases of prepubertal teratoma at the Armed Forces Institute of Pathology did not reveal evidence of multifocal disease or carcinoma in situ of the adjacent testis.

**1049** The primary advantage of using frozen semen rather than fresh semen for in vitro fertilization with donor sperm is:

A) improved implantation rates.
B) improvement in embryonic vitality scores.
C) increased number of cryopreservable spare embryos.
D) decreased risk of HIV transmission.
E) decreased number of insemination cycles required to achieve a pregnancy.

**Correct Answer** **D**

**Explanation** Recent concerns over the transmission of sexually transmitted diseases by donor insemination have led to the use of frozen donor sperm, which permits quarantine of frozen sperm with re-screening of donors. The price for this increased safety is a low per cycle pregnancy rate, largely due to decreased motility of frozen-thawed donor sperm. The number of insemination cycles required to achieve a pregnancy may increase, although the cumulative pregnancy rates appear to be the same as with fresh semen.

**1050** The superficial inguinal lymph nodes are separated from the deep inguinal lymph nodes by:

A) sartorius muscle.
B) Cooper's ligament.
C) adductor longus muscle.
D) fascia lata.
E) pectineus muscle.

**Correct Answer** **D**

**Explanation** The superficial inguinal lymph nodes anastomose with the deep inguinal lymph nodes, which are located below the fascia lata. The other structures given are encountered in an inguinal lymph node dissection but do not serve to separate the superficial and deep inguinal lymph nodes.

**1051** A 17-year-old boy undergoes evaluation for delayed puberty. He is above average height, has bilateral small testes, and gynecomastia. Serum FSH and LH are elevated and testosterone is low. This patient is at increased risk for:

A) prostate cancer.
B) seminoma.
C) Sertoli cell tumor.
D) breast cancer.
E) gonadoblastoma.

**Correct Answer** **D**

**Explanation** This patient has Klinefelter's syndrome which is characterized by small firm testes, varying degrees of impaired sexual maturation, azoospermia, gynecomastia and elevated gonadotropins. The fundamental defect is an extra X chromosome. The common chromosomal pattern is 47,XXY (classic form) or 46,XY/47,XXY. This disorder is the most common major abnormality of sexual differentiation with an incidence of 1 in 500 males. They usually come to attention after the time of expected puberty and often are diagnosed incidentally. Gynecomastia is dependent on the ratio of circulating estrogen:androgen. The risk of breast cancer is 20 times that in normal men, although the incidence is only about one-fifth that in women.